Instructional Contexts for Engagement and Achievement in Reading*

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Abstract

In this chapter, we review research on students' engagement in reading activities and how classroom instructional practices influence engagement in reading and other academic activities. We define engaged readers as motivated to read, strategic in their approaches to reading, knowledgeable in their construction of meaning from text, and socially interactive while reading. We present a conceptual model of reading engagement linking classroom practices directly and indirectly to students' motivation to read, behavioral engagement in reading, and reading achievement. A major premise of this model is that behavioral engagement in reading mediates the effects of classroom practices on reading outcomes. We present evidence from a variety of experimental and correlational studies documenting the direct and indirect links among classroom practices, motivation, behavioral engagement, and achievement outcomes. One reading comprehension instructional program on which we focus is Concept-Oriented Reading Instruction. This program integrates strategy instruction and instructional practices to foster students' reading motivation, and teaches reading, in particular, in content domains such as science and social studies.

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Defining Engagement

The construct of engagement is increasingly prominent in the educational and developmental psychology literatures and is defined generally as involvement, participation, and commitment to some set of activities. Skinner, Kindermann, Connell, and Wellborn (2009a) described engagement as a reflection or manifestation of motivated action and noted that action incorporates emotions, attention, goals, and other psychological processes along with persistent and effortful behavior. Fredricks, Blumenfeld, and Paris

S.L. Christenson et al. (eds.), *Handbook of Research on Student Engagement*,
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(2004) defined behavioral, emotional, and cognitive aspects of school engagement. Behavioral engagement is direct involvement in a set of activities and includes positive conduct, effort and persistence, and participation in extracurricular activities. Emotional engagement covers both positive and negative affective reactions (e.g., interest, boredom, anxiety, frustration) to activities, as well as to the individuals with whom one does the activities (teachers, peers). It also comprises identification with school. Cognitive engagement means willingness to exert the mental effort needed to comprehend challenging concepts and accomplish difficult tasks in different domains, as well as the use of self-regulatory and other strategies to guide one's cognitive efforts.

We have focused on students' engagement in reading activities and defined reading engagement as interacting with text in ways that are both strategic and motivated (Guthrie & Wigfield, 2000). More broadly, we and our colleagues have described engaged readers as motivated to read, strategic in their approaches to comprehending what they read, knowledgeable in their construction of meaning from text, and socially interactive while reading (Guthrie, McGough, Bennett, & Rice, 1996; Guthrie & Wigfield, 2000; Guthrie, Wigfield, & Perencevich, 2004; see also Baker, Dreher, & Guthrie, 2000). In this review, we introduce the construct of behavioral engagement to this set of engagement processes. Specific indicators of behavioral engagement of reading include students' report of effort and persistence (Skinner, Kindermann, & Furrer, 2009b), students' report of time spent reading (Guthrie, Wigfield, Metsala, & Cox, 1999), and teachers' observations of students' reading behaviors (Wigfield et al., 2008).

Students' engagement in reading is enhanced when the contexts in which reading occurs foster it. There are a variety of instructional practices that foster students' reading engagement, and we discuss them below. We believe that engagement in reading is crucial to the development of reading comprehension skills and reading achievement; we present evidence documenting this point throughout the chapter. By focusing on reading, we address an urgent problem in education which is that high proportions of students are disaffected with reading. They overwhelmingly shun books in science, history, and math that carry the substance of their education. In other words, in elementary and secondary education, disengagement from reading is a national dilemma (Grigg, Ryan, Jin, & Campbell, 2003; Perie, Grigg, & Donahue, 2005).

Engagement and motivation are related terms that sometimes are used interchangeably in the literature (e.g., National Research Council, 2004), but we believe the constructs should be distinguished from one another (see also Fredricks et al., 2004; Skinner et al., 2009a, 2009b for distinctions between these constructs). As just noted, engagement is a multidimensional construct that includes behavioral, cognitive, and affective attributes associated with being deeply involved in an activity such as reading; indeed, Fredricks et al. (2004) called engagement a meta-construct. By contrast, motivation is a more specific construct that relates to engagement but can be distinguished from it. Motivation is what energizes and directs behavior and often is defined with respect to the beliefs, values, and goals individuals have for different activities (Eccles & Wigfield, 2002; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006).

Motivation often is domain specific; in the reading domain, we defined reading motivation as follows: "Reading motivation is the individual's personal goals, values, and beliefs with regard to the topics, processes, and outcomes of reading" (Guthrie & Wigfield, 2000, p. 405). Motivation also is important for the maintenance of behavior, particularly when activities are cognitively demanding (Wolters, 2003). Reading is one such activity, as many different cognitive skills are involved. These range from processing individual words to generating meaning from complex texts. Furthermore, although reading is required for many school tasks and activities, it is also something students can choose to do or not; "Am I going to read or do something else?" Given

these characteristics, motivation is especially crucial to reading engagement. Like Skinner et al. (2009a, 2009b), then, we believe that engagement reflects motivated action. When students are positively motivated to read, they will be more engaged in reading. We discuss how specific aspects of motivation relate to engagement later in this chapter.

Engagement Perspective on Reading

We (Guthrie & Wigfield, 2000) developed an engagement perspective on reading that connects classroom instructional practices to students' motivations, strategy use, conceptual knowledge, and social interactions, and ultimately to their reading outcomes. Students' motivation includes multifaceted aspects such as goals, intrinsic and extrinsic motivation, values, self-efficacy, and social motivation. These motivational aspects of the reader propel students to choose to read and to use cognitive strategies to comprehend. The *strategies* in the model refer to students' multiple cognitive processes of comprehending, self-monitoring, and constructing their understanding and beliefs during reading. *Conceptual knowledge* refers to the notion that reading is knowledge-driven. *Social interactions* include collaborative practices in a community and the social goals of helping other students or cooperating with a teacher. These in turn influence students' reading achievement, knowledge gained from reading, and the kinds of practices in which they engage.

We chose the instructional practices in the model for two primary reasons. First, each practice has been shown to relate to students' motivation and achievement in a variety of correlational and classroom-based studies (see Guthrie & Humenick, 2004, for a meta-analytic review of the work on a number of these practices). Second, several of the practices are included in Concept-Oriented Reading Instruction (CORI), a reading comprehension instruction program that combines reading strategy instruction, support for student motivation, and connections to content areas (Guthrie, Wigfield, & Perencevich, 2004; Guthrie et al., 1996). As the instructional practices have been described fully elsewhere (e.g., Guthrie, McRae, & Klauda, 2007), we briefly mention them here and present an example lesson later in this chapter.

Learning and knowledge goals refer to core learning goals for particular topic areas that provide students with compelling cognitive reasons for learning the material.

Real-world interactions are connections between the academic curriculum and the personal experiences of the learners and, more specifically, are stimulating activities that connect students to the content they are learning. These real-world interactions also provide motivation for students to read more about what they are learning.

Instructional Practices

- *Autonomy support* is based on premises from self-determination theory (Ryan & Deci, 2009) that giving students some control over their own learning is motivating.
- *Interesting texts* refers to the practice of providing an abundance of high interest texts in the classroom.
- *Strategy instruction* concerns the kinds of reading strategies teachers teach; in CORI, a set of strategies shown to have strong empirical support (National Reading Panel, 2000) are the strategies used in the program.
- *Collaboration* is the social discourse among students in a learning community that enables them to see perspectives and to socially construct knowledge from text (Johnson & Johnson, 2009).
- *Praise and rewards* involve the ways in which teachers provide feedback to students (Brophy, 1981). Rewards are often used in reading instruction and other instructional programs as a way to build students' motivation (Gambrell & Marniak, 1997).
- Students are *evaluated* in classrooms in a myriad of ways. Some methods of evaluation can provide meaningful information about student

learning and actually can support student motivation (Afflerbach, 1998).

- Finally, *teacher involvement* represents the teacher's knowledge of individual learners, caring about their progress and pedagogical understanding of how to foster their active participation (Skinner & Belmont, 1993).

Guthrie and Wigfield (2000) reviewed evidence for the connections of each of these practices to reading outcomes.

A crucial assumption in this model is that the effects of instructional practices on the student outcomes of achievement, knowledge, and reading practices are mediated by the engagement processes (see also Skinner & Belmont, 1993). That is, classroom contexts only affect student outcomes to the extent that they produce high levels of student engagement. Behavioral engagement is one of these processes and is increased by CORI.

Conceptual Framework for Engagement Processes in Reading

Purposes of the Framework

Figure 29.1 presents our current framework on engagement that depicts both the direct and indirect (or mediated) effects of classroom practices and conditions on student reading outcomes, particularly their reading competence. Our aim in building this framework is to describe how instruction, motivation, behavioral engagement, and achievement are related. The classroom practices and conditions in the box at the left of the figure include many of those incorporated in Guthrie and Wigfield's (2000) engagement model of reading development, and others that are particularly relevant to middle school reading, the focus of our current research project on enhancing adolescents' engagement in reading (Guthrie, Klauda, & Morrison, 2012; Guthrie, Mason-Singh, & Coddington, 2012). Our framework is consistent with the perspective of Appleton, Christenson, and Furlong (2008) in that we seek the characteristics of classrooms that are sufficiently powerful to impact variables for which educators are held accountable, such as achievement on major tests as well as experimental measures. Furthermore, we attempt to identify and document the engagement processes that serve as links between the practices of teachers and students' outcomes.

Depicted in this graphic are the engagement processes in reading consisting of motivations to read, behavioral engagement in reading, and reading competence, along with classroom contexts. Many of the studies we review in this chapter show that behavioral engagement in reading impacts reading competence, and motivations to read impact behavioral engagement in reading. Our rationale for considering these all to be engagement processes is that they represent motivational, behavioral, and cognitive dimensions of

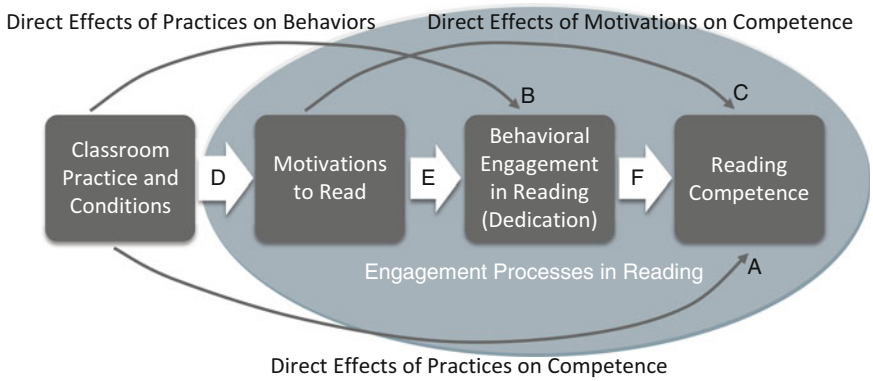

Fig. 29.1 Model of reading engagement processes within classroom contexts

interacting with text. On the far left of the graphic, classroom practices and conditions are shown to represent their role in impacting motivations, behavioral engagement, and reading competence. We will review empirical evidence documenting that classroom practices have both direct effects on competence and indirect effects mediated by motivations and behavioral engagement. In this graphic, the capital letters represent pathways from classroom practices through engagement processes to reading competence. Although empirical research is likely to reveal reciprocal pathways throughout this model, we do not include them here because they have not been widely studied in reading and the current evidence for them is limited. We do not address emotional engagement or affective processes because they have not been studied frequently in reading, and space constraints prevent us from examining them here. We do address cognitive engagement, such as the use of strategies for reading, because it is important to control for them statistically when investigating the associations of behavioral engagement and reading achievement. This review of context effects is organized by reviewing evidence for each pathway, beginning with the effects of behavioral engagement on reading competence, and then discussing each pathway in the model. In several instances, a particular study provides evidence for more than one pathway in the model. We discuss these studies in each pathway where it supplies documentation.

Behavioral Engagement Impacts Reading Competence

Our rationale for linking behavioral engagement in reading and reading competence (Path F) is grounded in cognitive science (van den Broek, Rapp, & Kendeou, 2005; Walczyk et al., 2007). Experimental studies show that acquiring declarative knowledge from text demands the complex system of rapid, automatic processes at the word and sentence level integrated with effortful, deliberate processes of inferencing and reasoning (Kendeou, van den Broek, White, & Lynch, 2007). As facilitators of reading competence, these processes may be termed "cognitive engagement." These processes demand effort and attention sustained over substantial amounts of time during which this cognitive system is acquired to a level of expertise (Ericsson, Krampe, & Tesch-Romer, 1993).

While students are expending effort in the behavior of reading, motivational processes are occurring simultaneously. If the book is interesting, the reading act may be intrinsically motivating. If the book is perceived as important, the reading behavior may contribute to a student's sense of identification with reading in school. It is during this passage of time that motivations impact students' cognitive proficiencies. When motivations are positive (intrinsic motivation), cognitions increase; when motivations are negative (avoidance or disaffection), behaviors become aversive, leading to a gradual decline in cognitive proficiency. It is evident that cognitive expertise cannot be attained without sustained behaviors, and the absence of reading behaviors is a precursor to cognitive decline.

Evidence for the Effects of Behavioral Engagement on Competence in Reading

In this section, we document that time, effort, and persistence in reading behaviors impacts a variety of indicators of reading competence. The studies for this section are presented in Table 29.1. However, this documentation cannot be simple. A student who spends a high amount of time reading and also has high competence, according to standardized test scores, is likely to have a variety of correlated characteristics. Most basically, this student is likely to have high amounts of background knowledge about the topic or genre of the reading behavior. The relationship of behavioral engagement and achievement is confounded by many variables. For example, a behaviorally engaged student with high reading competence is likely to have high levels of motivation, such as self-efficacy and intrinsic motivation for reading, and so these variables must be taken into account in analyses. Guthrie et al. (1999)

Table 29.1 Effects of behavioral engagement on competence in reading

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Duckworth et al. (2007a)	1,545 Adults aged 25 and older	NA	1. Grit	(a) Age (b) Educational attainment	$\eta^2 = 0.05$*** for educational attainment
Duckworth et al. (2007b)	690 Adults aged 25 and older	NA	1. Grit	(a) Age (b) Educational attainment	$\eta^2 = 0.05$*** for educational attainment
Duckworth et al. (2007c)	139 Undergraduate students	NA	1. GPA	(a) Grit (b) SAT	$r_{1a} = 0.34$*** after SAT scores were held constant
Duckworth et al. (2007d)	1,218 Freshman in the US Military Academy, West Point	NA	1. Summer retention 2. First-year academic GPA 3. Military performance score (MPS)	(a) Grit (b) Self-control (c) Whole Candidate Score	$\beta_{1a} = 0.44$**[d] after self-control and Whole Candidate Score were held constant, partial $r_{2a} = -0.01$, ns; partial $r_{3a} = 0.09$**
Duckworth et al. (2007e)	1,308 Freshman in the US Military Academy, West Point	NA	1. Summer retention	(a) Grit (b) Conscientiousness (c) Whole Candidate Score	$\beta_{1a} = 0.39$*[e]
Duckworth et al. (2007f)	175 National Spelling Bee finalists from 7 to 15 years old	NA	1. Final round 2. Prior competition 3. Study time	(a) Grit (b) Self-control (c) Verbal IQ Score (d) Study time (e) Prior competition	$\beta_{1a} = 0.62$**[f] $\beta_{3a} = 0.28$***[g] $\beta_{1d} = 0.30$***[h] Study time was a mediator between grit and performance $\beta_{2a} = 0.48$*[i] $\beta_{1e} = 1.21$***[j] Prior final competition was a mediator between grit and performance
Duckworth and Seligman (2005a)	140	8	1. Final GPA	(a) Self-discipline (b) First-making-period GPA	$r_{1a} = 0.55$*** $R^2 = 0.85$***[k] $\beta_{1a} = 0.10$*
Duckworth and Seligman (2005b)	164	8	1. Final GPA	(a) Self-discipline (b) First-making-period GPA (c) IQ	$r_{1a} = 0.67$*** $R^2 = 0.90$***[l] $\beta_{1a} = 0.08$*
Fredricks et al. (2004)	Review				
Guthrie, Klauda, et al. (2012)	1,200	7	1. Reading achievement 2. Avoidance of reading information books for school	(a) Amount of school reading (b) Amount of out-of-school reading (c) FARMS status (d) Amount of information book reading (e) Devaluing (f) Perceived difficulty	$r_{1a} = 0.20$** with FARMS status partialed out $r_{1b} = 0.19$** with FARMS status partialed out $r_{1d} = 0.04$ (ns) with FARMS status partialed out $\beta_{2e} = 0.75$*** $\beta_{2f} = 0.14$***

Guthrie et al. (1999a)	271	3, 5	1. Passage comprehension 2. Conceptual learning from multiple texts	(a) Past achievement (b) Prior knowledge (c) Motivation (d) Self-efficacy (e) Reading amount	$\Delta R^2 = 0.015^{m}$ for reading amount $\beta_{1e} = 0.126^{*}$ $\Delta R^2 = 0.022^{m}$ for reading amount $\beta_{2e} = 0.150^{*}$
Guthrie et al. (1999b)	17,424	10	1. Text comprehension	(a) Reading amount (b) Past reading comprehension achievement (c) Reading efficacy (d) Reading motivation (e) SES	$\beta_{1a} = 0.12^{***}$ $r_{1a} = 0.29^{***}$ $\Delta R^2 = 0.014^{m}$ for reading amount
Jang (2008)	136 College students	NA	1. Conceptual learning 2. Identified Regulation 3. Engagement 4. Interest regulation	(a) Rationale	Model 1: $\beta_{13} = 0.45^{*n}$ $R^2 = 0.20$ Model 2: $\beta_{13} = 0.44^{*}$ $R^2 = 0.20$ Model 3: $\beta_{13} = 0.44^{*}$ $R^2 = 0.20$
Ladd and Dinella (2009)	383 Children	Ages 5.5–13.5	1. Initial levels of achievement (achievement intercepts) 2. Growth in scholastic achievement from first through eighth grade (achievement slopes)	(a) Changes in school liking-avoidance from first through third grade (b) Changes in cooperative-resistant classroom participation from first through third grade (c) Average school liking-avoidance from first through third grade (d) Average cooperative-resistant classroom participation from first through third grade	$\beta_{2b} = 0.31^{**o}$ $\beta_{2d} = 0.37^{**}$
Orvis et al. (2009)	274	College students	1. Learning	(a) Off-task attention (b) Training satisfaction (c) Training motivation (d) Goal orientation (e) Learner control	$\beta_{1a} = -0.15^{*p}$
Reeve et al. (2002a)	141	College students	1. Identification experience (perceived importance and perceived self-determination as the indicator variables) 2. Effort	(a) Reason to try	$\beta_{1a} = 0.26^{**}$ $\beta_{21} = 0.59^{**}$
Reeve et al. (2002b)	70	College students	1. Identification experience 2. Pre-lesson identified regulation 3. Effort	(a) Reason to try	$\beta_{1a} = 0.34^{**}$ $\beta_{21} = 0.54^{**}$ $\beta_{13} = 0.45^{**}$

(continued)

Table 29.1 (continued)

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Salamonson et al. (2009)	126 Second-year nursing students	NA	1. Academic performance in pathophysiology	(a) Overall homework completion (b) Overall lecture attendance (c) Hours spent in part-time employment	$R^2=0.381$[q] $\beta_{1a}=0.44$*** $\beta_{1b}=0.21$* $\beta_{1c}=-0.26$***
Schwinger et al. (2009)	231	11, 12	1. GPA	(a) Motivational regulation strategies (b) Effort management (c) Intelligence	$\beta_{1b}=0.29$**[r] $R^2=0.11$

*$p<0.05$, **$p<0.01$, ***$p<0.001$

Notes

[a] We only included the studies documenting path F in Fig. 29.1

[b] We did not include those variables which the authors reported as covariates or as control variables in their analyses

[c] We only reported the effect sizes of behavioral engagement on outcomes of our interest

[d] The effect size reported in this study is the standardized beta coefficient in the final model in which three predictors (grit, self-control, and Whole Candidate Score) were simultaneously entered to predict summer retention

[e] The effect size reported in this study is the standardized beta coefficient in the final model in which three predictors (grit, conscientiousness, and Whole Candidate Score) were simultaneously entered to predict summer retention

[f] The effect size reported here is the beta coefficient in the model in which three predictors (grit, self-control, and age) were simultaneously entered to predict final round

[g] The effect size reported here is the beta coefficient in the model in which two predictors (grit and age) were simultaneously entered to predict study time

[h] The effect size reported here is the beta coefficient in the model in which three predictors (grit, study time, and age) were simultaneously entered to predict final round

[i] The effect size reported here is the beta coefficient in the model in which two predictors (grit and age) were simultaneously entered to predict prior competition

[j] The effect size reported here is the beta coefficient in the model in which three predictors (grit, number of prior competition, and age) were simultaneously entered to predict 2005 final round

[k] The effect size reported here is R^2 for the overall regression with two predictors (self-discipline and first-making-period GPA)

[l] The effect size reported here is R^2 for the overall regression with four predictors (self-discipline, IQ, April achievement test scores, and first-making-period GPA)

[m] The effect size reported here ΔR^2 was the unique contribution of reading amount to the outcome above and beyond the other predictors in the model

[n] The effect sizes reported in this study are standardized coefficients in structural equation modeling

[o] The effect sizes reported in this study are path coefficients in path analysis

[p] The effect sizes reported in this study are standardized path coefficients in structural equation modeling

[q] The effect sizes reported in this study is R^2 for the overall regression with seven predictors (overall homework completion, overall lecture attendance, hours spend in part-time employment, study time on pathophysiology, age, sex, and non-English speaking at home)

[r] The effect sizes reported in this study is R^2 of GPA predicted by effort management

found that third- and fifth-grade students' self-report of amount of time spent reading in school and out of school was associated with competency tests of students' reading comprehension, even when controlling for background knowledge, previous grades, intrinsic motivation, and self-efficacy. This finding appeared not only for single passages but for acquisition of knowledge from text in a 2-day learning activity. They also found in a nationally representative sample of tenth-grade students that behavioral engagement in reading (assessed by time spent) was correlated with reading comprehension test scores, when the potentially confounding variables of past achievement, SES, and self-efficacy were controlled statistically. Thus, behavioral engagement impacted reading competence for samples of elementary and secondary students, when potentially confounding cognitive and motivational variables were statistically controlled.

As indicated previously, students' aversion to reading information texts in secondary school is a widespread crisis. In middle school, the highest achievers overwhelmingly rate information text to be uninteresting (Guthrie, Klauda, et al., 2012). In this light, it is valuable to understand the variables that influence students' competence in reading uninteresting text (Reeve, Jang, Hardre, & Omura, 2002). In one experimental study, Jang (2008) gave one group of college students the task of reading some text about statistical correlations, which was not interesting to them, with the rationale that the text was important to their professions. The behavioral engagement of this group increased compared to a group not told that this material was beneficial to them. After reading the texts, the group given the "importance rationale" was superior in conceptual understanding of the text. Thus, experimentally increasing behavioral engagement enhanced students' conceptual learning. Note that this study also provides evidence for other pathways in our model; we discuss this evidence later. In a longitudinal study with children ages 5–13, Ladd and Dinella (2009) examined the effect of behavioral engagement on a wide variety of reading achievement tests. Some students showed high behavioral engagement of interest, attention, and participation in classwork. Other students showed behavioral disengagement consisting of resistance by not performing tasks, not completing homework, and acting defiantly toward academic activities. Statistically controlling for reading achievement in grade 1, the gain in reading from grades 1 to 8 was higher for students whose behavioral engagement increased in grades 1–3 than for students whose resistance and behavioral disengagement increased in grades 1–3. In other words, increasing behavioral engagement produced the positive slope for achievement, whereas decreasing behavioral engagement produced a less positive slope in measured reading competence.

A variety of studies document the generalizability of this effect of behavioral engagement in reading on reading competence, using different indicators of engagement. Schwinger, Steinmayr, and Spinath (2009) measured 11th- and 12th-grade German high school students' effort management as an indicator of behavioral engagement. Investigators used items such as "I study hard whether I am interested or not." Such behavioral engagement predicted students' GPAs, although intelligence also predicted GPA and the behavioral engagement effect was not statistically controlled. Salamonson, Andrew, and Everett (2009) used homework completion in a nursing program, which consisted of textbook reading, as an indicator of behavioral engagement; this variable likely reflected time spent reading. Controlling for age and ethnicity, this indicator was a positive predictor of academic performance in a course on pathophysiology. In an electronic learning environment, off-task attention was an indicator of behavioral disengagement from learning, which predicted subsequent posttest scores (Orvis, Fisher, & Wasserman, 2009). Although statistical controls were often absent, these studies suggest that behavioral engagement is a robust variable impacting competence for a variety of reading tasks at a variety of ages.

In related research, students' reports of effort and perseverance have been referred to as self-discipline (Duckworth, Peterson, Matthews, & Kelly, 2007). In characterizing self-discipline, they used items such as "I am a hard worker," "I finish whatever I begin," and "I have achieved a goal that took years of work." Using this measure

in a series of six studies, the investigators found that this measure of self-discipline correlated significantly with GPAs, even when SAT scores were held constant for college students. Duckworth and Seligman (2005) used a similar measure of self-discipline in a study of eighth-grade students and found that it predicted GPA more strongly than did IQ. Furthermore, this indicator of behavioral engagement predicted GPA when controlling for previous IQ scores. The authors concluded that the duration and direction of effort predict the development of expertise more fully than indicators of talent or aptitude. One limitation of this research was that the motivational sources of behavioral engagement were not explicitly investigated. However, such sources have been examined in the engagement literature.

Motivations Impact Behavioral Engagement in Reading

We turn next to a consideration of Path E, links of motivation with behavioral engagement. The studies for this section are presented in Table 29.2. Our argument in this section is that motivations such as self-efficacy, intrinsic motivation, and valuing that are related to reading increase an individual's reading behaviors, that is, the effort, attention, time spent, concentration, and long-term persistence in reading activities. As discussed earlier, we distinguish motivations from behavioral engagement because they are referring to goals, values, beliefs, and dispositions rather than physical behaviors (Wigfield & Guthrie, 2010). In the literature that relates motivation to reading, motivational constructs have been drawn from four theoretical perspectives including expectancy value theory (Wigfield & Eccles, 2002), social cognitive theory (Bandura & Schunk, 1981), goal theory (Maehr & Zusho, 2009), and self-determination theory (Ryan & Deci, 2000). Relations of key constructs from these theories to reading are portrayed in Guthrie and Coddington (2009).

In attempting to characterize a relationship between motivations and behavioral engagement in reading, it is beneficial to consider controlling potentially confounding variables. For example, both motivation and behavioral engagement are likely to be correlated with achievement, as indicated by test scores or grades, and declarative knowledge of the world, which facilitates comprehension and is associated with motivation for reading. As discussed earlier, Guthrie et al. (1999) reported that intrinsic motivation predicted behavioral engagement measured by students' self-reported frequency and breadth of reading activities, even when students' prior knowledge, past achievement, and self-efficacy in reading were controlled. Thus, while controlling for self-efficacy and the cognitive variables of background knowledge and school achievement, intrinsic motivation was associated with behavioral engagement in reading for both elementary and secondary level students. These results extended previous findings by Wigfield and Guthrie (1997) that intrinsic motivation constructs such as challenge, curiosity, and involvement correlated with students' amount and breadth of reading behaviors.

Students' behavioral engagement in reading, according to their self-reported frequency and breadth of reading activities, has further been associated with multiple motivations. Lau (2009) found that 11–18-year olds' intrinsic motivation and social motivation each made unique contributions to their amount of reading, although self-efficacy and extrinsic motivation for reading, which were also included in the model, did not make significant contributions. While this finding appeared for younger secondary students, only intrinsic motivation uniquely contributed to amount of reading when the other motivational constructs were controlled in the model for older secondary students. Thus, intrinsic motivation, which was measured as enjoying reading, appeared to predominate as a predictor of behavioral engagement in reading for both age groups when several other motivational constructs were statistically controlled.

As discussed earlier, Jang (2008) found that when college students were required to perform the aversive task of reading uninteresting material, the extent to which they valued the content of the text determined the extent of their behavioral

Table 29.2 Effects of motivations on behavioral engagement and on reading competence

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Anmarkrud and Bräten (2009)	104	9	1. Reading comprehension	(a) Topic knowledge (b) Deeper strategies (c) Surface strategies (d) Reading efficacy (e) Reading task value (f) Previous semester social studies grades	$r_{1e}=0.46$*** $\beta_{1c}=0.24$** $\Delta R^2=0.06$** for reading efficacy and reading task value on reading comprehension[d]
Baker and Wigfield (1999)	371	5, 6	1. Students' reports of their reading activity 2. Gates-MacGinitie Reading Comprehension Test Scores 3. CTBS reading 4. Performance assessment	(a) Challenge (b) Self-efficacy (c) Curiosity (d) Involvement (e) Social (f) Importance (g) Recognition (h) Grades (i) Competition (j) Work avoidance (k) Compliance	$r_{1a}=0.51$*** $r_{1b}=0.43$*** $r_{1c}=0.43$*** $r_{1d}=0.51$*** $r_{1e}=0.46$*** $r_{2j}=-0.26$*** $r_{3j}=-0.24$*** $r_{4j}=-0.13$* $r_{4k}=0.21$*** $r_{4h}=0.14$* $r_{4g}=0.14$*
Chan (1994)	338	5, 7, 9	1. Reading comprehension 2. Use of reading strategies 3. Knowledge of reading strategies	(a) Perceived cognitive competence (b) Belief in personal control (c) Learned helplessness	For grade 5, $\beta_{1c}=-0.32$ $\beta_{2a}=0.44$[e] For grade 7, $\beta_{1b}=0.24$ $\beta_{2a}=0.20$ For grade 9, $\beta_{2a}=0.22$ $\beta_{2b}=0.29$
Durik et al. (2006)	606	4, 10	1. Time per week spent reading for pleasure in 10th grade 2. Number of language arts courses per year of high school 3. Reading relatedness of 12th-grade career aspirations	(a) Tenth-grade self-concept of ability (b) Tenth-grade importance (c) Tenth-grade intrinsic value (d) Fourth-grade self-concept of ability (e) Fourth-grade importance (f) Fourth-grade intrinsic value (g) Third-grade reading grade (h) Eighth-grade English grade	$\beta_{1a}=0.22$[f] $\beta_{2a}=0.18$ $\beta_{2d}=0.13$ $\beta_{2b}=0.19$ $\beta_{2e}=0.23$ $\beta_{1c}=0.16$ $\beta_{2c}=0.18$ $\beta_{1f}=0.18$
Greene et al. (2004)	220	High school students	1. Percentage of course points in the English class, which is a combination of exams, projects, and homework assignments	(a) Self-efficacy (b) Perceived instrumentality (c) Autonomy support (d) Motivating tasks	$r_{1a}=0.47$** $r_{1b}=0.245$** $r_{1c}=0.24$** $r_{1d}=0.20$**
Guthrie, Klauda, et al. (2012)	1,200	7	1. Information text comprehension	(a) Perceived difficulty (b) Self-efficacy	$r_{1a}=-0.22$** $r_{1b}=0.18$**

(continued)

Table 29.2 (continued)

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Guthrie et al. (1999a)	271	3, 5	1. Passage comprehension 2. Conceptual learning from multiple texts 3. Reading amount	(a) Past achievement (b) Prior knowledge (c) Reading motivation (d) Self-efficacy (e) Reading amount (f) Intrinsic motivation (g) Extrinsic motivation	$\beta_{3c}=0.383$*** $\Delta R^2=0.138$[g] $\beta_{3f}=0.333$*** $\Delta R^2=0.107$ $\beta_{3g}=0.364$*** $\Delta R^2=0.124$
Guthrie et al. (1999b)	17,424	10	1. Text comprehension 2. Reading amount	(a) Reading amount (b) Past reading comprehension achievement (c) Reading efficacy (d) Reading motivation (e) SES	$r_{2d}=0.29$**** $r_{1d}=0.59$**** $\beta_{1d}=0.419$*** $\Delta R^2=0.229$[g] $\beta_{2d}=0.266$*** $\Delta R^2=0.083$
Guthrie, Wigfield, Barbosa, et al. (2004a)	361	3	1. Multiple text comprehension 2. Passage comprehension	(a) Motivation composite, including self-efficacy, challenge, involvement, and curiosity	$r_{1a}=0.76$* $r_{2a}=0.82$**
Guthrie, Wigfield, Barbosa, et al. (2004b)	524	3	1. Gates-MacGinitie Reading Comprehension Test 2. Passage comprehension	(a) Intrinsic motivation (b) Self-efficacy (c) Extrinsic motivation	$r_{1a}=0.88$** $r_{1b}=0.81$** $r_{2a}=0.75$** $r_{2b}=0.75$**
Guthrie, Hoa, et al. (2007)	31	4	1. Gates-MacGinitie Reading Comprehension Test 2. Multiple text comprehension	(a) Interest (b) Choice (c) Involvement (d) Efficacy (e) Social motivation	$\Delta R^2=0.12$ for interest[h] $\Delta R^2=0.22$ for choice $\Delta R^2=0.12$ for involvement $\Delta R^2=0.03$ for efficacy $\Delta R^2=0.06$ for social motivation
Jang (2008)	136 College students	NA	1. Conceptual learning 2. Identified regulation 3. Engagement 4. Interest regulation	(a) Rationale	Model 1: $\beta_{32}=0.33$*[i] $R^2=0.19$ Model 2: $\beta_{34}=0.25$* $\beta_{3a}=0.22$* $R^2=0.16$ Model 3: $\beta_{32}=0.32$* $R^2=0.19$
Lau (2009)	1,146	11–18 years of age	1. Reading amount 2. Self-efficacy 3. Intrinsic motivation 4. Extrinsic motivation 5. Social motivation	(a) Perception of reading instruction	$\beta_{3a}=0.49$ $\beta_{5a}=0.55$ $\beta_{2a}=0.44$ $\beta_{4a}=0.46$ $\beta_{13}=0.28$ $\beta_{15}=0.26$
Legault et al. (2006a)	351	12–18 years of age	1. Academic amotivation	(a) Value of task[j] (b) Ability beliefs[j] (c) Task characteristics[j] (d) Effort beliefs[j]	$r_{ab}=0.36$*** $r_{ac}=0.66$*** $r_{ad}=0.51$*** $r_{bc}=0.30$*** $r_{bd}=0.55$*** $r_{cd}=0.64$***

Legault et al. (2006b)	349	12–18 years of age	1. Academic performance 2. Time spent studying 3. Intention to drop out	(a) Value of task[j] (b) Ability beliefs[j] (c) Task characteristics[j] (d) Effort beliefs[j]	$r_{1a}=-0.12$* $r_{2a}=-0.33$*** $r_{3a}=0.46$*** $r_{1b}=-0.42$*** $r_{2b}=-0.18$** $r_{3b}=0.36$*** $r_{1d}=-0.15$** $r_{2d}=-0.23$***
Legault et al. (2006c)	741	12–19 years of age	1. Academic performance 2. Problem behaviors 3. Academic self-esteem 4. Intention to drop out	(a) Value of task[j] (b) Ability beliefs[j] (c) Task characteristics[j] (d) Effort beliefs[j]	$\beta_{1b}=-0.39$*[k] $\beta_{1d}=-0.34$* $\beta_{2a}=0.21$* $\beta_{2d}=0.38$* $\beta_{3b}=-0.65$* $\beta_{4a}=0.49$*** $\beta_{4b}=0.28$*
Morgan and Fuchs (2007)	Review				
Nolen (1988)	50	8	1. Use of deep processing strategies	(a) General task orientation (b) Task-specific task involvement (c) Perceived value of deep processing strategy (d) Perceived ability (e) Science grade	$\beta_{1a}=0.31$**[l] $\beta_{1b}=0.39$*** $\beta_{1c}=0.18$ $\beta_{ac}=0.40$*** $\beta_{ab}=0.28$*
Pintrich and de Groot (1990)	173	7	1. Cognitive strategy use 2. Self-regulation 3. Student performance on seatwork 4. Student performance on exams/quizzes 5. Student performance on essays/reports 6. Student performance on average grade for the course	(a) Self-efficacy (b) Intrinsic value (c) Test anxiety	$r_{1b}=0.63$*** $r_{2b}=0.73$*** $r_{1a}=0.33$*** $r_{2a}=0.44$*** Partial $r_{23}=0.18$* Partial $r_{24}=0.26$*** Partial $r_{25}=0.22$*** Partial $r_{6a}=0.18$* Partial $r_{62}=0.22$**
Rapp and van den Broek (2005)	Review				
Schiefele (1999)	Review				
Schunk and Zimmerman (2007)	Review				
Strambler and Weinstein (2010)	111	1–5	1. 2004–2005 Language arts score. 2. 2004–2005 Math score	(a) Academic valuing (b) Academic devaluing (c) Alternative ID	$\beta_{1b}=-0.41$*[m] $\beta_{2b}=-0.45$*

(continued)

Table 29.2 (continued)

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Wang and Guthrie (2004)	187 US students and 197 Chinese students	4	1. Text comprehension 2. Enjoyment reading amount 3. School reading amount	(a) Intrinsic motivation (curiosity, involvement, and preference for challenge) (b) Extrinsic motivation (recognition, grades, social, competition, and compliance)	$\beta_{1a}=0.64$[n] $\beta_{1b}=-0.57$ $\beta_{2a}=0.85$ $\beta_{2b}=-0.44$ $\beta_{3a}=0.26$ $\beta_{3b}=0.04$
Wigfield and Guthrie (1997)	105	4, 5	1. Reading amount 2. Reading breadth	(a) Reading efficacy (b) Curiosity (c) Involvement (d) Recognition (e) Grades (f) Social (g) Challenge (h) Intrinsic composite (i) Extrinsic composite	$r_{1a}=0.36$** $r_{2a}=0.30$** $r_{1b}=0.24$* $r_{2b}=0.22$* $r_{1c}=0.24$* $r_{2c}=0.35$** $r_{1d}=0.24$* $r_{2d}=0.25$* $\Delta R^2=0.07$ for extrinsic composite on children's reading amount[o] $\Delta R^2=0.15$ for intrinsic composite on children's breadth of reading[p]

*$p<0.05$, **$p<0.01$, ***$p<0.001$, ****$p<0.0001$

Notes

[a] We only included the studies documenting paths E and C in Fig. 29.1

[b] We did not include those variables which the authors reported as covariates or as control variables in their analyses

[c] We only reported the effect sizes of motivations on behavioral engagement (path E) and motivations on reading competence (path C)

[d] This ΔR^2 was the unique contribution of reading efficacy and reading task value to reading comprehension above and beyond gender, prior achievement, topic knowledge, deeper strategies, and surface strategies

[e] All the effect sizes reported in this study are path coefficients in path analysis

[f] All the beta coefficients reported in this study are standardized path coefficients in structural equation modeling

[g] All the ΔR^2 reported in this study are the unique contributions of the variable of interest to the outcome, after controlling for the other variables in the model

[h] All the ΔR^2 reported in this study are the unique contributions of the variables of interest to Gates-MacGinitie Reading Comprehension Test in December, after controlling for prior reading achievement in September

[i] All the beta coefficients reported in this study are standardized path coefficients in structural equation modeling

[j] These variables are negatively coded in these studies, with high scores representing high levels in the four dimensions of academic amotivation and low scores representing low levels in the four dimensions of academic amotivation

[k] All the beta coefficients reported in this study are standardized path coefficients in structural equation modeling

[l] All the effect sizes reported in this study are causal correlations obtained in path analysis

[m] All the effect sizes reported in this study are standardized path coefficients in structural equation modeling

[n] All the effect sizes reported in this study are the direct effects of the variables of interest on the outcomes, which were obtained from the decomposition of effects for structural paths. Due to the space limit, we only reported the effects sizes for the US students

[o] This ΔR^2 was the unique contribution of spring extrinsic composite to 1993 reading amount above and beyond 1992 reading amount, fall intrinsic composite, fall extrinsic composite, and spring intrinsic composite

[p] This ΔR^2 was the unique contribution of spring intrinsic composite to children's spring reading breadth above and beyond their fall reading breadth, fall intrinsic composite, fall extrinsic composite, and spring extrinsic composite

engagement in the reading activity. Behavioral engagement was optimized for students who showed identified regulation, which referred to believing that the text content was beneficial to their professional work. Students high on identified regulation believed that the task was important and worthwhile to them. In this context, identified regulation (perceived value) contributed to behavioral engagement, but interest in the text did not significantly contribute to behavioral engagement in reading the texts. Consequently, although intrinsic motivation is consistently associated with behavioral engagement in academic reading tasks, when those reading tasks are inherently uninteresting, valuing the content for personal reasons other than intrinsic motivation is likely to be associated with behavioral engagement in reading.

To this point, we have documented that intrinsic motivation and valuing contribute to the behavioral engagement in reading in terms of its quantity, such as amount of time spent, frequency of behavioral activities, and breadth of reading. In addition, motivations are associated with the quality of behavioral engagement. To oversimplify a range of cognitive science phenomena (Rapp & van den Broek, 2005), reading can be deep or superficial. Deep processing strategies consist of making inferences, forming summaries, integrating diverse elements, and monitoring one's comprehension during reading. Superficial strategies are typified by underlining, memorizing, and seeking to complete tasks rather than comprehending fully. Nolen (1988) investigated motivations that were associated with deep processing strategies of eighth graders who were asked to read expository passages. Intrinsic motivation for learning (or the goal of understanding and learning for its own sake) was positively associated with the use of deep processing strategies for text comprehension. In contrast, ego orientation (the goal of demonstrating high ability in comparison to others) was positively related to use of surface-level strategies only. This finding confirmed reports of Pintrich and de Groot (1990) that intrinsic motivation for classwork in reading/language arts was associated with deep processing strategies for text comprehension. Thus, it is evident that motivational constructs not only increase the amount of behavioral engagement but also influence the quality of behavioral engagement by activating cognitive strategies that are productive for full comprehension of complex text.

Behavioral engagement in reading can be expanded to choices that students make during school and leisure time. In a longitudinal study of students from grades 3 to 12, Durik, Vida, and Eccles (2006) tracked the extent to which motivational constructs influenced behavioral engagement in the form of selection of courses and the pursuit of leisure reading. Behavioral engagement was characterized by the number of language arts classes students took per year, including composition, American literature, speech, and humanities. In a longitudinal path model, students' valuing (ratings of importance for reading and language arts) in grade 4 predicted the behavioral engagement in terms of the number of courses selected in grade 10. Self-efficacy in grade 4 predicted number of courses taken in grade 10, but intrinsic value for reading in grade 4 did not predict number of courses directly but was mediated by intrinsic valuing for reading in grade 10. In comparison, the behavioral engagement of leisure reading out of school was predicted by intrinsic motivation in grade 4, although leisure reading was not predicted by valuing or self-efficacy in grade 4.

In summary, it is evident that motivations (such as valuing) activated in a brief laboratory activity increased behavioral engagement in an assigned reading task (Jang, 2008), and more sustained, wide-ranging intrinsic motivation for reading in elementary grades predicted amount of participation in reading intensive courses in high school (Durik et al., 2006). The linkage between motivation and behavioral engagement in reading appears to be viable within highly situated classroom contexts and across a broad sweep of time and place of reading in the schooling process.

Motivations Impact Reading Competence

Figure 29.1 includes a direct pathway from motivations to read to reading competence. In the

schematic, it is labeled Path C: Direct Effects of Motivations on Competence. This refers to studies that document the association between a variety of motivations and reading competence; the studies relevant to this path are summarized in Table 29.2. Similar to other constructs in the model, motivations and reading competence are both likely to be correlated with other variables (Chan, 1994). These variables need to be controlled to examine clearly the relations of motivation to reading competence, as Guthrie et al. (1999) did in their study showing that intrinsic reading motivation predicted text comprehension more highly than SES, past achievement, reading amount, or self-efficacy, although the controlling variables were all statistically significant.

The potential mediation of the effect of motivation on reading competence by behavioral engagement was investigated by Jang (2008). In his classroom study with college students, he reported that valuing the content of the text increased test scores reflecting reading comprehension. This effect was mediated by the amount and quality of students' behavioral engagement in the reading activity; thus, valuing impacted reading competence through the activation of competence-relevant reading behaviors. Anmarkrud and Bråten (2009) examined how reading task value predicted ninth-grade students' social studies reading comprehension. Reading competence was measured by a test of reading comprehension containing inferential and literal items. Reading task value, which consisted of perceived importance and utility of reading, predicted text comprehension while controlling for the variables of gender, grades, topic knowledge, deep strategy use, surface strategy use, and self-efficacy in reading. This shows that valuing was associated with reading competence, even when multiple cognitive and motivational variables that may have been present in the Jang study were statistically controlled.

Interest in reading is a motivational construct that has frequently been associated with reading competence. In a review of the empirical literature, Schiefele (1999) observed that interest is akin to intrinsic motivation, but interest is more tightly tied to a particular text. Students rarely have an interest in all texts and all genres. However, ratings of interestingness for a particular text are highly associated with the outcome of rich conceptual understanding from reading. Although such deep understanding is highly correlated with amount of background knowledge, Schiefele's studies showed that interest has a unique contribution to reading competence after background has been controlled either statistically or experimentally. Although Schiefele's studies were based on measures of self-reported interest in text, other investigators have determined interest through questionnaires and interviews. In one interview study, students' interests were based on their positive affect toward texts, topics in texts, authors, or series of books. Reliable rubrics were used to gauge levels of interest based on two 30-min interviews. With this measure, fourth graders' interest in reading in September of the academic year predicted their growth in reading comprehension from September to December. Interest in reading explained 12% of the variance in reading comprehension in December after September levels of reading comprehension were controlled. In addition, a person-centered profile analysis showed that students who increased in motivation from September to December showed higher reading comprehension growth than students who did not increase in motivation during that time period. In other words, not only does high interest in reading forecast comprehension growth, but an increase in the motivations of self-efficacy and involvement in reading forecast reading growth as well (Guthrie, Hoa, et al., 2007).

Self-efficacy is argued to contribute to reading competence through its effect on students' self-regulation (Schunk & Zimmerman, 2007). These authors said that "Self-efficacy refers to learners' perceived capabilities for learning or performing actions at designated levels, while self-regulation refers to self-generated thoughts, feelings, and actions that are systematically designed to affect one's learning of knowledge and skills" (p. 7). In other words, self-efficacy is expected to influence the quality of students' behavioral engagement with reading tasks, which will consequently have a positive influence on reading competence. Consistent with this formulation, self-efficacy is correlated with reading comprehension in many

studies (Baker & Wigfield, 1999; Greene, Miller, Crowson, Duke, & Akey, 2004; Guthrie et al., 1999; Guthrie, Wigfield, Barbosa, et al. 2004). In addition, the highly related measure of perceived difficulty in reading has been observed to correlate with reading competency measures in middle school students. For example, for the total sample, perceived difficulty correlated −.22 with information text comprehension, whereas self-efficacy correlated .18 with the same variable when other motivations and gender were statistically controlled (Guthrie, Klauda, et al., 2012).

Another motivational variable associated with reading competence is devaluing. Legault, Green-Demers, and Pelletier (2006) defined devaluing as the rejection of importance or utility of academic work and disidentification with schooling. Strambler and Weinstein (2010) studied devaluing of language arts among African American and Hispanic students. Devaluing was characterized by questionnaire items such as the following: "I don't care about learning." "I don't care about getting a bad grade." In a path analysis, devaluing negatively predicted language arts test scores significantly at −.45 when positive valuing and alternative identification (seeking to be popular, fashionable, cool) were statistically controlled (Strambler & Weinstein, 2010).

The relationship between motivations and competence is almost certainly reciprocal. As Morgan and Fuchs (2007) documented, when end of year achievement in reading is controlled for beginning of year levels, motivations are associated with end of year performance. Simultaneously, when end of year motivations are controlled for beginning of year levels of motivation, reading comprehension is associated with end of year motivation levels. In other words, achievement predicts motivation growth and motivation predicts achievement growth simultaneously. These findings appear for motivational constructs of task orientation (interest in reading), self-efficacy, and perceived difficulty. By contrast, Guthrie, Hoa, et al. (2007) reported that while reading motivation levels (interest in reading books for enjoyment) predicted reading comprehension growth, reading comprehension levels did not predict motivation growth for students in the later elementary grades. However, this issue has not been fully examined for later elementary and secondary students or for special groups of lower or higher achievers.

Classroom Practices Impact Students' Motivations

We turn next to the direct path from classroom practices to students' motivation (Path D). The studies for this section are presented in Table 29.3. In this chapter, we characterize the classroom context in terms of teachers' explicit teaching activities and practices. A widely promoted and documented classroom practice that impacts students' motivation is autonomy support (Green et al., 2004; Reeve, Jang, Carrell, Jeon, & Barch, 2004; Zhou, Ma, & Deci, 2009). This construct, based in self-determination theory (Ryan & Deci, 2009), refers to the instructor taking the students' perspectives, acknowledging students' feelings, and providing them with opportunities for choice or self-direction. Such teaching minimizes the use of controlling pressures and demands. Across a range of subjects including English, students who were afforded autonomy support by the teacher were more likely than other students to report placing a high value on reading (identified regulation) or intrinsically motivated reading (integrated regulation). The identified student believes that school activities and materials such as books are important and useful, whereas the integrated student is intrinsically motivated to read, which involves "doing an activity out of interest because it is rewarding in its own right" (Zhou et al., 2009, p. 492). Thus, autonomy support fosters valuing and intrinsic motivation. In elementary school, autonomy support may assume the form of providing challenging and interesting texts for reading (Miller & Meece, 1999).

In our current study with middle school readers, we increasingly are focused on the teaching practice of relevance along with autonomy support (Guthrie, Mason-Singh, et al., in press). Relevance means instructional activities that are related to students' lives. Perceived relevance is associated with self-efficacy and social motivation

Table 29.3 Effects of classroom practices on motivations, behavioral engagement, and competence

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Assor et al. (2002)	862	3–8	1. Behavioral and cognitive engagement	(a) Intruding (b) Suppressing criticism (c) Fostering relevance (d) Allowing criticism (e) Providing choice (f) Fostering understanding and interest (g) Forcing meaningless activities	$\beta_{1c}=0.25$***[d] for grades 3–5 $R^2=0.15$ $\beta_{1c}=0.24$* for grades 6–8 $R^2=0.19$ $r_{be}=-0.44$** $r_{bf}=-0.59$** $r_{eg}=-0.25$** $r_{fg}=-0.18$** $r_{ae}=-0.31$** $r_{af}=-0.49$**
Decker et al. (2007)	44	K-6	1. Student-report social skills 2. Student-report engagement 3. Teacher-report social skills 4. Teacher-report engagement 5. Academic engaged time 6. Behavioral referrals 7. Suspensions	(a) Teachers' perspective of the student-teacher relationship (b) Student perspective—psychological proximity seeking (c) Student perspective—emotional quality	$\beta_{1a}=0.38$* $\Delta R^2=0.14$[e] $\beta_{2a}=0.42$** $\Delta R^2=0.18$ $\beta_{3a}=0.47$*** $\Delta R^2=0.22$ $\beta_{4a}=0.38$** $\Delta R^2=0.14$ $\beta_{5a}=-0.37$* $\beta_{5c}=0.49$** $\beta_{6b}=0.36$* $\beta_{6c}=-0.41$** $\beta_{7a}=-0.38$** $\beta_{7c}=-0.31$*
Dill and Boykin (2000)	72	5	1. Text-recall performance 2. Evaluative item: liked the learning period 3. Evaluative item: would do the project again 4. Evaluative item: cared about peer	(a) Learning context: communal (b) Learning context: peer (c) Learning context: individual (d) Gender	$\eta^2=0.112$ Between learning context and recall $M_{1a}>M_{1b}$*$M_{1a}>M_{1c}$*[f] $r_{3a}=0.478$* $r_{4a}=0.596$** $r_{2b}=0.406$* $r_{4b}=0.467$*
Filaka and Sheldon (2008)	220 College students	NA	1. Course approval 2. Instructor approval 3. Grade prediction 4. Need satisfaction 5. Student self-determined motivation	(a) Teacher autonomy support	$\beta_{5a}=0.35$**[g] $\beta_{4a}=0.76$** $\beta_{45}=0.26$** $\beta_{14}=0.74$** $\beta_{24}=0.72$** $\beta_{34}=0.28$**
Furrer and Skinner (2003)	641	3–6	1. Teacher-report student behavioral engagement 2. Child-report student behavioral engagement 3. Changes in child-report engagement from the beginning to the end of the school year	(a) Relatedness to teacher (b) Relatedness to peer (c) Overall relatedness in the fall	$\beta_{1a}=0.14$**[h] $\Delta R^2=0.01$ $\beta_{1b}=0.11$* $\Delta R^2=0.01$ $\beta_{2a}=0.26$** $\Delta R^2=0.05$ $\beta_{2b}=0.16$** $\Delta R^2=0.02$ $\beta_{3c}=0.12$** $R^2=0.59$

Greene et al. (2004)	220	High school students	1. Percentage of course points in the English class, which is a combination of exams, projects, and homework assignments 2. Self-efficacy 3. Mastery goals 4. Performance-approach goals	(a) Autonomy support (b) Self-efficacy (c) Strategy use	$\beta_{2a}=0.22$* $\beta_{1b}=0.38$* $\beta_{1c}=0.15$* $\beta_{3b}=0.24$* $\beta_{4b}=0.22$*
Guthrie, Klauda, et al. (2012)	1,200	7	1. Dedication in reading 2. Self-efficacy	(a) Relevance (b) Choices (c) Collaboration (d) Success (in text) (e) Thematic unit	$r_{1a}=0.36$** $r_{1b}=0.19$** $r_{1d}=0.23$** $r_{2d}=0.61$**
Guthrie, Mason-Singh, et al. (in press)	1,200	7	1. Social motivation 2. Self-efficacy 3. Intrinsic motivation 4. Value	(a) Collaboration (b) Thematic unit (c) Reading awareness	$\beta_{1a}=0.30$*[i] For African American students $\beta_{2b}=0.46$** For African American students $\beta_{2b}=0.24$** For European American students $\beta_{4c}=0.29$* For African American students $\beta_{4c}=0.38$* For European American students $\beta_{3c}=0.32$* For European American students
Guthrie, McRae, et al. (2007)	Review				
Guthrie, Wigfield, Barbosa, et al. (2004a)	361	3	1. Multiple text comprehension 2. Passage comprehension	(a) Motivation composite, including self-efficacy, challenge, involvement, and curiosity	$r_{1a}=0.76$* $r_{2a}=0.82$**
Guthrie, Wigfield, Barbosa, et al. (2004b)	524	3	1. Gates-MacGinitie Reading Comprehension Test 2. Passage comprehension	(a) Intrinsic motivation (b) Self-efficacy (c) Extrinsic motivation	$r_{1a}=0.88$** $r_{1b}=0.81$** $r_{2a}=0.75$** $r_{2b}=0.75$**
Hamre and Pianta (2005)	908	5–6 Years of age	1. Achievement (Woodcock-Johnson)	(a) Instructional support (b) Emotional support (c) Maternal education (d) High functional risk (e) Maternal education × instructional support (f) High functional risk × emotional support	$\eta^2=0.02$** For maternal education × instructional support $\eta^2=0.01$* For high functional risk × emotional support

(continued)

Table 29.3 (continued)

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Jang (2008)	136 College students	NA	1. Conceptual learning 2. Identified regulation 3. Engagement 4. Interest regulation	(a) Rationale (b) Identified regulation (c) Engagement (d) Interest regulation	Model 1:[j] $\beta_{2a}=0.42^*$ $\beta_{32}=0.33^*$ $\beta_{13}=0.45^*$ Model 2: $\beta_{4a}=0.41^*$ $\beta_{34}=0.25^*$ $\beta_{13}=0.44^*$ Model 3: $\beta_{2a}=0.41^*$ $\beta_{32}=0.32^*$ $\beta_{13}=0.44^*$ $\beta_{2b}=0.41^*$
Lau (2009)	1,146	11–18 years of age	1. Reading amount 2. Self-efficacy 3. Intrinsic motivation 4. Extrinsic motivation 5. Social motivation	(a) Perception of reading instruction	$\beta_{3a}=0.49^k$ $\beta_{5a}=0.55$ $\beta_{2a}=0.44$ $\beta_{4a}=0.46$ $\beta_{13}=0.28$ $\beta_{15}=0.26$
Miller and Meece (1999)	24	3	1. Students' value ratings of academic task	(a) Academic task (high/low challenge) (b) Type of value question: liking and interest in an academic task (c) Exposure (maximum/minimum) (d) Achievement (high/average/low)	Main effect F (1, 36) = 5.04*, indicating students expressing a greater liking and interest in the high-challenge academic tasks
Perry et al. (2007)	257	1	1. Math achievement 2. Interpersonal behavior 3. Intrapersonal behavior 4. Self-perceived competence	(a) Child-centered practices	$\gamma_{1a}=3.17^{**l}$ $\gamma_{2a}=-12.39^*$ $\gamma_{3a}=-15.94^*$ $\gamma_{4a}=0.09^{**}$
Ponitz et al. (2009)	171	K	1. Spring reading 2. Behavioral engagement	(a) Classroom quality (b) Fall reading (c) Sociodemographic risk	$\beta_{2a}=0.16^{*m}$ $\beta_{12}=0.18^*$
Reeve et al. (2004)	20 High school teachers	NA	1. Teacher's autonomy-supportive behaviors 2. Students' engagement: task involvement (third observation) 3. Students' engagement: influence attempts (third observation)	(a) Teacher exposure to information on how to support students' autonomy (b) Teacher's autonomy support (third observation)	Unique $R^2_{2b}=0.37^n$ $\beta_{2b}=0.61^{**}$ Unique $R^2_{3b}=0.29$ $\beta_{3b}=0.54^{**}$
Ryan and Deci (2009)	Review				
Schunk and Zimmerman (2007)	Review				

Shih (2008)	343	8	1. Behavioral engagement: involvement 2. Behavioral engagement: persistence 3. Behavioral engagement: participation 4. Behavioral engagement: avoiding 5. Behavioral engagement: ignoring	(a) Perceived autonomy support (b) Mastery-approach goal (c) Mastery-avoidance goal (d) Performance-approach goal (e) Performance-avoidance goal (f) Controlled motivation (g) Autonomous motivation	$\beta_{1a}=0.24^{***o}$ $\beta_{1b}=0.30^{***}$ $\beta_{1f}=-0.20^{***}$ $\beta_{1g}=0.35^{***}$ $\beta_{2b}=0.39^{***}$ $\beta_{2g}=0.31^{***}$ $\beta_{3a}=0.17^{**}$ $\beta_{3b}=0.23^{**}$ $\beta_{3g}=0.26^{***}$ $\beta_{4b}=-0.34^{***}$ $\beta_{4e}=0.24^{***}$ $\beta_{4f}=0.19^{**}$ $\beta_{4g}=-0.23^{**}$ $\beta_{5a}=-0.17^{**}$ $\beta_{5b}=-0.29^{**}$ $\beta_{5f}=0.17^{**}$
Skinner and Belmont (1993)	144	3, 4, 5	1. Student perception of structure 2. Student perception of autonomy support 3. Student perception of involvement 4. Student behavioral engagement 5. Student emotional engagement	(a) Teacher involvement (b) Teacher autonomy support (c) Teacher structure (d) Teacher perception of student behavioral engagement (e) Teacher perception of student emotional engagement	$\beta_{1a}=0.28^{**p}$ $\beta_{2a}=0.25^{***}$ $\beta_{3a}=0.25^{**}$ $\beta_{41}=0.33^{***}$ $\beta_{53}=0.20^{*}$ $\beta_{cd}=0.28^{**}$ $\beta_{bd}=0.72^{***}$ $\beta_{ad}=0.61^{***}$
Skinner et al. (2008)	805	4–7	1. Changes in engaged behavior from fall to spring 2. Changes in disaffected behavior from fall to spring	(a) Student report of teacher support (b) Teacher report of teacher support	$\beta_{1a}=0.23^{***}$ $R^2=0.37$ $\beta_{2a}=-0.12^{***}$ $R^2=0.46$ $\beta_{1b}=0.07^{*}$
Skinner et al. (2009b)	1,018	3–6	1. Student reports of engagement in spring of year 3 2. Teacher reports of engagement in spring of year 3	(a) Teacher warmth (b) Teacher structure (c) Teacher autonomy support	$r_{1a}=0.55^{**}$ $r_{1b}=0.55^{**}$ $r_{1c}=0.47^{**}$ $r_{2a}=0.26^{**}$ $r_{2b}=0.28^{**}$ $r_{2c}=0.20^{**}$
Souvignier and Mokhlesgerami (2006)	593	5	1. Reading comprehension 2. Understanding the use of reading strategies 3. Application of reading strategies 4. Self-efficacy 5. Motivational orientation	(a) Instructional group: MSR + strat + CSR (b) Instructional group: strat + CSR (c) Instructional group: strat (d) Instructional group: control	$T_{a-b}=2.25^{*q}$ For reading comprehension in retention $d_{a-d}=0.82$ For understanding the use of reading strategies in retention $T_{a-b}=2.20^{*}$ For application of reading strategies in retention $d_{a-d}=1.12$ For application of reading strategies in retention $T_{a-b}=2.20^{*}$ For motivational orientation in retention

(continued)

Table 29.3 (continued)

Citation[a]	Number of participants	Grade levels	Dependent variables	Independent variables[b]	Strength of association[c]
Strambler and Weinstein (2010)	111	1–5	1. 2004–2005 Language arts score 2. 2004–2005 Math scores	(a) Academic valuing (b) Academic devaluing (c) Alternative ID	$\beta_{1b} = -0.41^{*r}$ $\beta_{2b} = -0.45^{*}$
Vansteenkiste et al. (2004a)	200 College students	NA	1. Autonomous motivation 2. Superficial processing 3. Deep processing 4. Test performance 5. Persistence	(a) Intrinsic goal framing vs. extrinsic goal (b) Autonomy-supportive context vs. controlling contexts	$\eta^2_{1a} = 0.59^{***s}$ $\eta^2_{3a} = 0.42^{***}$ $\eta^2_{4a} = 0.21^{***}$ $\eta^2_{5a} = 0.12^{***}$
Vansteenkiste et al. (2004b)	377 College students	NA	1. Autonomous motivation 2. Superficial processing 3. Deep processing 4. Underlining 5. Test performance 6. Persistence	(a) Intrinsic goal framing vs. extrinsic goal (b) Autonomy-supportive context vs. controlling contexts	$\eta^2_{1a} = 0.59^{***s}$ $\eta^2_{3a} = 0.35^{***}$ $\eta^2_{4a} = 0.17^{***}$ $\eta^2_{6a} = 0.12^{***}$
Vansteenkiste et al. (2004c)	224	10, 11	1. Autonomous motivation 2. Test performance 3. Persistence	(a) Intrinsic goal framing vs. extrinsic goal (b) Autonomy-supportive context vs. controlling contexts	$\eta^2_{1a} = 0.50^{***s}$ $\eta^2_{2a} = 0.16^{***}$ $\eta^2_{3a} = 0.09^{***}$
Vansteenkiste et al. (2005a)	130	5, 6	1. Perceived autonomy 2. Conceptual learning T1 3. Rote learning T1 4. Conceptual learning T2 5. Rote learning T2	(a) Goal orientation (intrinsic, extrinsic) (b) Communication style (autonomy support, internal control, external control)	Main effect: $\eta^2 = 0.13^{**t}$ for goal orientation $\eta^2 = 0.30^{***}$ for communication style $\eta^2_{4a} = 0.05^{*}$
Vansteenkiste et al. (2005b)	113	11- to 12-year-olds	1. Perceived autonomy 2. Conceptual learning T1 3. Conceptual learning T2	(a) Goal orientation (intrinsic, extrinsic) (b) Communication style (autonomy support, internal control)	Main effect: $\eta^2 = 0.25^{***}$ for goal orientation $\eta^2 = 0.52^{***}$ for communication $\eta^2_{3a} = 0.30^{***u}$
Vansteenkiste et al. (2005c)	80	11-to 12-year-olds	1. Conceptual learning 2. Task involvement 3. Relative autonomy	(a) Goal orientation (intrinsic, extrinsic) (b) Communication style (autonomy support, internal control)	Main effect: $\eta^2 = 0.31^{***v}$ for goal orientation $\eta^2 = 0.87^{***}$ for communication $\eta^2_{1a} = 0.07^{*}$ $\eta^2_{2a} = 0.15^{***}$
Wentzel (2009)	Review				

Wigfield et al. (2008)	315	4	1. Gates-MacGinitie Reading Comprehension 2. Multiple text comprehension 3. Strategy composite	(a) Instructional groups (CORI, SI, TI) (b) Engagement	Main effect of instructional group: $F(8, 18) = 4.10$ ** b(CORI) > b(SI)** b(CORI) > b(TI)* With engagement as covariate, main effect of instructional group: $F(3, 6) < 1$ ns
Zhou et al. (2009a)	195	4–6	1. Interest 2. Perceived competence 3. Perceived choice	(a) Autonomous motivation (b) Controlled motivation (c) Interaction term	$\beta_{1a} = 0.60$** $R^2 = 0.36$***[w] $\beta_{2a} = 0.58$*** $R^2 = 0.39$*** $\beta_{3a} = 0.38$*** $R^2 = 0.20$***
Zhou et al. (2009b)	48	4, 5	1. Autonomous motivation at time 2 2. Controlled motivation at time 2 3. Perceived competence at time 2 4. Perceived choice at time 2 5. Interest at time 2	(a) Autonomous motivation at time 1 (b) Controlled motivation at time 1 (c) Perceived competence at time 1 (d) Perceived choice at time 1 (e) Interest at time 1 (f) Change in perceived teacher autonomy support from time 1 to time 2	$\beta_{1f} = 0.31$*[x] $\beta_{3f} = 0.50$***

*$p<0.05$, **$p<0.01$, ***$p<0.001$, ****$p<0.0001$

Notes

[a]We only included the studies documenting paths A, B, and D in Fig. 29.1

[b]We did not include those variables which the authors reported as covariates or as control variables in their analyses

[c]We only reported the effect sizes of classroom practices on motivations (path D), behavioral engagement (path B), and reading competence (path A)

[d]The effect sizes reported in this study are the standardized beta coefficients obtained in simultaneous multiple regressions. The R^2 refers to the contributions of the five predictors (intruding, suppressing criticism, fostering relevance, allowing criticism, providing choice) to the outcome

[e]The effect sizes reported in this study are the standardized beta weights in multiple regressions. ΔR^2 are the unique contributions of each predictor to the outcomes

[f]The post hoc analysis indicated that students assigned to communal learning ($M = 6.67$) context outperformed students assigned to both the peer ($M = 4.29$) and individual ($M = 4.21$)

[g]All the effect sizes reported in this study are path coefficients in path analysis

[h]All the effect sizes reported in this study are beta coefficients in multiple regressions. The ΔR^2 were the unique contributions of the variable of interest to the outcomes

[i]The effect sizes reported here are standardized beta coefficients in stepwise multiple regression

[j]All the effect sizes reported in this study are standardized coefficients in structural equation modeling

[k]Due to the space limit, we only reported the effects sizes for junior secondary students. All the effects sizes reported in this study are significant path coefficients in path analysis

(continued)

Table 29.3 (continued)

[l]The effect sizes reported in this study are the gamma coefficients in hierarchical linear modeling
[m]The effect sizes reported in this study are standardized coefficients in structural equation modeling
[n]Due to space limit, we only reported the effect sizes for the third observation. The ΔR^2 is the unique contribution of teacher autonomy support (during the third observation) to student engagement outcomes, after controlling for students' engagement and teachers' autonomy support at the second observation
[o]The effect sizes reported in this study are the standardized beta coefficients in multiple regressions
[p]The effect sizes reported in this study are standardized regression coefficients in path analysis
[q]The original study reported the effect sizes in both posttest and retention. Due to the space limit, we only reported the effect sizes in retention
[r]All the effect sizes reported in this study are standardized coefficients in structural equation modeling
[s]Due to the space limit, we only reported the effect sizes for goal content
[t]Due to the space limit, we only reported the effect sizes for goal content.
was the effect of intrinsic goal on long-term conceptual learning after controlling for short-term conceptual learning
[u]Due to the space limit, we only reported the effect sizes for goal content. η^2_{3a} was the effect of intrinsic goal on long-term conceptual learning after controlling for short-term conceptual learning
[v]Due to the space limit, we only reported the effect sizes for goal content
[w]The effect sizes reported in this study are beta coefficients in multiple regressions. The R^2 are the contributions of the three predictors (autonomous motivation, controlled motivation, interaction term) to each outcome
[x]These effect sizes reported in this study are the beta coefficients in hierarchical regressions. Time 2 motivation and self-perception variables were regressed onto the corresponding variables in time 1 and then onto the residual scores of perceived teacher autonomy support at time 2 in the math and English classes, while controlling for time 1 autonomy support from their previous math or English classroom teachers

(Assor, Kaplan, & Roth, 2002; Lau, 2009). Providing students with an awareness of the benefits of reading increases their valuing of reading work in the classroom. For example, Jang (2008) told prospective teachers that reading about complications of statistical analyses would benefit their professions, which increased their perceived value for reading texts about statistics. Likewise, providing middle school students with an awareness that reading about science is important to their ability to explain their world and succeed in school increased students' valuing of information books such as science texts (Guthrie, Mason-Singh, et al., 2012).

Another important classroom characteristic is the quality of teacher-student relationships. When teachers emphasize collaboration and positive interpersonal relationships (between themselves and students and among students in the classroom), students' motivation increases for school in general and for reading. When students believe their teachers think they are important, they are likely to participate more socially in the classroom (Furrer & Skinner, 2003). As both teacher and student reports of the quality of teacher-student relationships increase, there are also enhancements in positive social interactions and engagement outcomes (Decker, Dona, & Christenson, 2007). For African American students in particular, collaborative learning environments enhance students' recall of stories and desire to participate in similar activities in the future (Dill & Boykin, 2000). Across a range of contexts, explicit arrangements for student collaborations in reading and writing increased students' satisfaction with the classroom (Guthrie, Mason-Singh, et al., in press).

Support for students' self-efficacy in reading and other subjects is crucial because self-efficacy is exceptionally low for struggling students. As portrayed by Schunk and Zimmerman (2007), several explicit teaching practices increase students' self-efficacy. The self-efficacy-fostering framework consists of providing students with process goals, which consists of steps for performing academic tasks successfully. Teachers provide feedback for success in the process goals rather than the students' products or outcomes. That is, teachers give specific direction to students about the effectiveness of their strategy for performing work and help students set realistic goals in their learning domain. Experimental studies summarized by these researchers confirm that these practices increase students' belief in their capacity, perceived competence, and eventually, their achievement in reading tasks. Also beneficial to students' self-efficacy in reading is their perception of coherence in the texts and tasks of instruction. When students can identify the links across specific domains of knowledge in their reading and perceive themes in the substance of their reading materials, they gain a belief that they can succeed in reading and writing about text (Guthrie, Mason-Singh, et al., in press).

Effects of teachers' practices on students' motivations are sufficiently powerful that they can have deleterious effects. Some teachers behave in ways that are devaluing for students. For example, negative feedback from teachers may be devaluing for students. When teachers consistently scold or make students feel bad for having the wrong answers, they respond by devaluing academic work, as indicated by their expressions that they do not care about learning or grades (Strambler & Weinstein, 2010). In addition, middle school students who experience no choices or limited choices in reading in Language Arts or Science classes show losses of intrinsic motivation for reading, according to self-report questionnaires. Likewise, when books are extremely difficult to read, students report declines in self-efficacy for reading. When books are irrelevant, as indicated by students' failure to report being able to connect the content to their prior knowledge or their life experiences, they report low levels of interest or dedication to reading (Guthrie, Klauda, et al., 2012). What this shows is that classroom practices are a sword that cuts in two directions. Affirming practices may foster positive affect and motivational growth, while at the same time undermining practices, such as negative feedback, controlling instruction, and irrelevance, may generate decreases in motivation. These findings are consistent with the correlational findings reported by Assor et al.

(2002) and reciprocal relationships between classroom instruction and student motivations found by Skinner and Belmont (1993).

Direct Effects of Classroom Practices on Behavioral Engagement

This assertion is represented in the schematic as Path B, which forms a connection between explicit practices and observed behavioral engagement. The studies for this section are presented in Table 29.3. In three studies with high school and college students, Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004) examined the effects of intrinsic goal framing as an instructional practice. The definition of intrinsic goal framing is that the purpose for reading relates to the students' personal interests and goals. For prospective teachers, intrinsic goal framing consisted of stating that reading the text will "help you teach toddlers well" or "help you make the world a better place." For adolescents with obesity issues, intrinsic goal framing consisted of showing that reading would enable students to improve their health and lose weight. In contrast, extrinsic goal framing consisted of stating that students should read to learn how to save money or improve one's physical image. In several experiments, students were given texts to read with one of the two goal frames. They were then given measures of reading comprehension that reflected either deep processing or surface memorizing. Finally, students were given a measure of behavioral engagement, which was an opportunity to persist in reading more about this topic following the experimental reading task and the assessment. Results showed that intrinsic goal framing increased deep processing of text (conceptual learning) and persistence, as indicated by time spent reading related materials. The effect of intrinsic goal framing on the behavioral indicator of engagement, which was persistence, was mediated by students' autonomous motivation, which was a composite of their valuing and interest in the texts. In sum, this set of studies confirms experimentally that intrinsic goal framing increased behavioral engagement, and its effect was mediated by autonomous motivation which combined interest and valuing for the content of the reading materials (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005).

Lau (2009) found middle and high school students' perception of instruction as relevant because it was related to their lives, useful for their goals, and interesting, showing higher volumes of reading activity (more reading engagement) than students who perceived the instruction as less relevant to them. The effect of relevance as a teaching practice was on behavioral engagement, as measured by amount of reading, and was fully mediated by intrinsic motivation and social motivation for younger secondary students. The effect of relevance of instruction was mediated for older secondary students by intrinsic motivation only. The behavioral engagement impacted by this instruction was educationally significant because highly engaged students were reading eight times more than disengaged students on a scale that measured frequency, time spent, and breadth of materials. These findings are similar to Vansteenkiste and colleagues' (2005) findings on intrinsic framing and were obtained in actual classroom contexts. In both cases, Path B in the model was affirmed, showing that the quality of classroom practices impacted behavioral engagement in reading mediated by intrinsic motivation and, in the latter case, also social motivation.

Another characteristic of the classroom context that is related to behavioral engagement is teacher support. This global indicator emphasizes students' perceptions of teacher involvement (warmth, knowledge, and dependability) and classroom structure (clarity of goals and expectations) (Skinner et al., 2009b). In this line of research, teacher support represents student-centeredness of instruction and contrasts with a domineering or controlling approach by the teacher. Furrer and Skinner (2003) found that teacher support is associated with increases in student engagement from fall to spring for students in grades 3–6. Students' behavioral engagement referred to their self-reported effort, attention, and persistence while participating in classroom learning activities. Consistent with

this finding, Skinner, Furrer, Marchand, and Kindermann (2008) reported that in grades 4–7, students' behavioral disaffection decreased from fall to spring as a consequence of teacher support. This decrease consisted of a reduction in students' lack of effort or withdrawal from learning activities. Although teacher support is not a specific practice, but rather a broad attribute that may be associated with a number of specific practices such as assuring success, providing relevance, offering choices, arranging collaborations, and providing themes for learning, it was strongly associated with students' increases in behavioral engagement (standardized regression coefficient of .23 ($p < .001$)) and decreases in behavioral disaffection (standardized regression coefficient of −.12 ($p < .001$)). The researchers did not examine the possible mediation by motivations of the relationship between teacher support and engagement.

Akin to these findings, Shih (2008) reported that Taiwanese eighth graders who reported perceptions of autonomy support from their teachers were likely to show relatively high levels of behavioral engagement in the form of listening carefully in class, persisting with hard problems, and participating in class discussions, while not ignoring classroom activities or avoiding hard challenges. In this case, perceived autonomy referred to the instructors' openness and acceptance of students.

Classroom Practices Impact Student Competence

In the graphic representation of the model of reading engagement processes with classroom contexts, we present classroom practices and conditions on the far left. The purpose of this location is to indicate that these contextual variables may influence students' motivations, behavioral engagement, and reading competence. At the most general level, a number of studies have shown that contextual variables of the classroom such as instructional practices, teacher support, and other conditions may directly impact students' reading competence; we denote this with Path A in the model. Although we believe that the effects of classroom practices on achievement are fully mediated by motivations and engagement, in the initial portion of this section, we briefly review research that has addressed the direct effect of motivational practices in the classroom on reading competence. In the second portion of the section, we identify a more limited set of contextual variables that have been shown to affect competence mediated either by students' motivations or their behavioral engagements in reading or both.

A number of studies based in self-determination theory (Ryan & Deci, 2009) document the effects of two forms of autonomy support on students' conceptual learning. It is reasonable to include those studies in this chapter on reading because the conceptual learning outcome has referred to knowledge gained from students' interaction with text. We discussed above Vansteenkiste and colleagues' (2005) experimental work on intrinsic framing, which refers to reasons for reading and studying texts that are personally significant to students, and also Jang's (2008) study on how giving students a rationale for reading uninteresting texts about statistics that will benefit students' careers and professional effectiveness increased students' conceptual learning from text. In some cases, the control condition of extrinsic framing increased factual memory and surface processing of text. Consequently, the effects of these practices on reading competence are firmly established experimentally. One limitation of these investigations is that they are short term, with brief interventions and limited measures of conceptual learning that may not be generalizable to academically significant success. A second limitation is that they have been performed mainly with college students.

Studies of classroom practices that increase students' motivation have also been performed with elementary and middle school students in Reading and Language Arts classrooms over periods from 6 to 36 weeks. We and our colleagues have examined how Concept-Oriented Reading Instruction (CORI) influences third-, fourth-, fifth-, and seventh-grade students' reading comprehension and engagement in reading (Guthrie,

Wigfield, Barbosa, et al. 2004; see Guthrie, McRae, et al., 2007, for review of the findings). CORI includes the classroom practices of providing relevance, choices, collaboration, leveled texts, and thematic units. This cluster of practices is designed to increase intrinsic motivation, self-efficacy, social motivation, and valuing for reading (Guthrie, Wigfield, & Perencevich, 2004).

To exemplify CORI, a synopsis of a lesson is presented next. The CORI goal is to teach reading comprehension with motivation support. This lesson is from a 6-week CORI unit that teaches the reading strategies of inferencing, summarizing, and concept mapping to foster seventh graders' comprehension of information text. Using the conceptual theme "Diversity of Life," this is lesson 9 which occurs in week 2.

The teacher posts the question for the day: "What are some special features of wetland plants that enable them to survive in their environment?" To begin, students view a 5-minute video about aquatic plants, showing their locations, stems, root systems, and leaf varieties. (This video supports intrinsic motivation by providing relevance for the texts that follow). Individuals record their observations of the video in a journal and share them with a partner. Partners then select one of two texts on aquatic plants. Together they locate a 2–4-page section that addresses the day's question (partnerships support social motivation; choice of texts supports students' autonomy).

Teachers guide students to select 2–5 key words that represent the main idea of the text, which they enter into their journals. Then teachers guide students to identify 3–4 supporting facts for each key word (scaffolding of the summarizing process enables students to learn a widely applicable strategy for summarizing information text—the essence of comprehension instruction; this scaffolding also assures success in grappling with complex information text, giving students support for increasing self-efficacy in reading these texts).

Next, the teacher gives students the choice of showing their understanding about "special features of wetland plants" by either writing a summary or drawing and labeling a diagram (choice of knowledge expression is autonomy supportive). Pairs of students select an option for self-expression and complete the task, entering it in their portfolio.

Teacher closes the lesson by asking, "What choices did you have today and how did they help you?" (In this 5-minute reflection, the students' awareness of autonomy support enhances their perception that the instruction affirms their motivational development as well as their acquisition of cognitive expertise in reading.)

Guthrie, Hoa, et al. (2007) performed a meta-analysis of CORI's effects across 11 experiments with 75 effect sizes. CORI was found to surpass comparison treatments in increasing students' competence according to standardized tests of reading comprehension (ES = .90), 2-day reading and writing tasks (ES = .93), passage comprehension (ES = .73), and reading fluency (ES = .59), as well as word recognition (ES = .75). CORI also fostered students' self-reported reading motivation (ES = 1.2) and teacher-reported students' engagement in reading (ES = 1.0), as well as amount of reading (ES = .49). This confirms that an integrated cluster of motivational practices over extended time can increase students' performance on educationally significant measures of reading comprehension. The bulk of the evidence shows that CORI impacted reading comprehension outcomes, although the one study that examined the issue also showed that this instructional effect was mediated by behavioral engagement (Wigfield et al., 2008; see further discussion below). Furthermore, these effects were confirmed by investigators who showed that an intervention that added motivational supports to instruction in self-regulation increased students' self-regulated reading more effectively than instruction that did not include motivational practices (Souvignier & Mokhlesgerami, 2006).

A burgeoning literature exists documenting the effect of perceived emotional support from teachers on students' academic performance (Wentzel, 2009). The outcomes of these studies are often grades rather than test scores, which may reflect students' motivational and social attributes in addition to their reading competence. In these studies, teacher support refers to students' relationships with teachers that enable them to

perceive the goals of teaching clearly, belief that their teachers will help them attain the goals efficiently, and that the students are in a safe and trusting environment. The findings range from grade 1 (Hamre & Pianta, 2005; Perry, Donohue, & Weinstein, 2007) to college classrooms (Filaka & Sheldon, 2008). For example, teacher support was found to increase competence in reading words and passages in the middle of first grade for students placed at risk due to low maternal education. The instructional effect of motivation practices was stronger than the effect of excellent pedagogy in word recognition for at-risk students (consisting of direct instruction in phonological knowledge and letter sound correspondences) (Hamre & Pianta, 2005).

One dominant construct in the teacher support literature is teacher caring, which correlates positively with academic achievement in reading and English courses (Wentzel, 2009). However, the specific ways in which teachers express caring for students have been little studied. It also is unclear how teacher caring relates to some of the other practices discussed earlier, such as helping students to see the relevance of instruction, make meaningful choices during learning, interact with classmates for academic purposes, enjoy the acquisition of expertise, and learn in meaningful, coherent themes; this remains an important topic for future research.

Indirect Effects of Classroom Practices on Students' Reading Competence

A few of the studies documenting the effects of classroom motivation practices on reading competence have attempted to quantify the mediation of these effects by students' motivations or behavioral engagements. As previously stated, we are proposing that under a majority of conditions, classroom practices and conditions that support student motivation in the classroom context are most likely to impact students' reading competence by virtue of their effects on students' motivations, which are then expected to increase behavioral engagement in reading, which is the proximal variable that influences cognitive competence in reading. The Jang (2008) study that we have discussed in this chapter documents this double mediation. All three pathways (D, E, and F) were tested in the study, illustrating that classroom practices impacted motivations, which increased behavioral engagements, which influenced reading competence. Jang found that college students who were given a rationale emphasizing the value of reading an uninteresting statistics text passage perceived the text as more important than did students not given the rationale; Jang stated that the students who received the value rationale increased in their identified regulation. Students whose perceived importance/identified regulation increased also showed enhanced behavioral engagement. According to the reports of external raters who observed students during their reading and learning, behaviorally engaged students were attentive, on task, effortful, and persistent in the face of challenges. Behaviorally disengaged students tended to be off task, passive, and give up quickly on the reading activity. In addition, highly behaviorally engaged students gained deeper conceptual understanding than less behaviorally engaged students, although behavioral engagement did not influence students' learning of minor facts. This confirms the proposition that the classroom practice of affording students a value rationale for learning increased students' perceived importance/identified regulation, which in turn increased their behavioral engagement during the reading activity, which enhanced their performance on the conceptual learning aspect of a reading test on this text. It should be noted that intrinsic motivation was not a mediator in this study. Although the effect of the value rationale on reading comprehension was mediated by students' values (identified regulation), it was not significantly mediated by students' intrinsic motivation (interest regulation). Thus, for the ecologically valid task of reading an uninteresting text, the mediating motivation was perceived importance, but not intrinsic motivation (reading interesting material), which is frequently shown to be a contributor to reading achievement.

Other investigators have shown that the impact of motivational practices on students' reading

competencies is mediated by students' behavioral engagement in actual classroom contexts. Wigfield et al. (2008) reported that the effects of CORI on fourth-grade students' reading comprehension were mediated by students' behavioral engagement in reading. In this investigation, students receiving CORI showed higher reading comprehension outcomes than students in control classrooms, but the effect of instructional conditions was fully mediated by the extensiveness of their behavioral engagement in reading activities.

The effects of intrinsic goal framing on conceptual learning described previously have occasionally been examined for their mediational processes. In Vansteenkiste et al.'s (2005) study, the effect of the autonomy-supportive communication style given by the experimenters during the study was mediated by students' autonomous motivation, which referred to their value and interest in the task. In this study, young adolescents who were obese were given a text on food nutrition and health. In one case, the material was presented sympathetically from the students' perspective and explained how students who understood it could improve their health and comfort. The control experimental condition presented the material didactically as a task they should attempt to master. Students who received the autonomy-supportive communications valued the reading activity more highly and gained conceptual knowledge (although not rote information) from it more fully. The motivational practice impacted students' understanding of major concepts, but not minor material in the texts, which shows that not all learning, but primarily high-level conceptual learning, was facilitated by motivational practices.

Examples of single mediation are also provided in practical classroom learning environments. For example, in Hamre and Pianta's (2005) study of reading instruction in kindergarten, global classroom quality was assessed in terms of teachers' provision of effective instruction while building warm emotional connections with students, which includes support for students' self-regulation, a balance of activities for children's diverse skill levels, and sensitivity to students' interests. Classrooms with high global quality induced high levels of behavioral engagement, which consisted of attending to tasks, completing reading activities, following rules, persisting in the face of difficulty, and exercising control. Students with high behavioral engagement showed more gain in reading competencies than students with lower behavioral engagement and lower global quality of instruction (Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009). At the other end of the educational continuum, in a college journalism course, students reported varying levels of perceived autonomy support from their laboratory instructor. They also reported intrinsic motivation for learning in the course. In this situation, the effect of autonomy-supportive instruction on students' grades was mediated by their intrinsic motivation for learning in the course (Filaka & Sheldon, 2008). These examples illustrate that the mediating processes of behavioral engagement and motivation are sufficiently prominent to be measured in research and to be functional in influencing students' grades and tested achievement in classrooms.

Limitations and Next Steps

The work reviewed in this chapter clearly documents how classroom practices and conditions impact student motivation, engagement, and competence. Equally, if not more important, there now is clear evidence that students' motivation and engagement mediate the effects of classroom practices on student achievement outcomes. That is, the impact of classroom practices on student outcomes depends upon the level of student engagement in classroom activities.

Although we have learned much about the linkages between classroom practices, motivation, engagement, and outcome as presented in Fig. 29.1, there are several limitations in this literature which should be noted. First, the large majority of studies of mediation entail structural equation modeling. In the absence of experimental designs, the inferences to causality are extremely limited. Although mediated effects are often assumed to have a causal direction, the

direction of causality cannot be inferred confidently any more easily than it can be with a zero order correlation. Specifically, mediation is a procedure to characterize overlapping variances, but it does not yield strong inferences about causal relationships. Experiments of the kind conducted by Vansteenkiste et al. (2004) should be extended. Instructional supports such as relevance, choice, student-centeredness, and teachers' emotional support have very rarely been investigated with experimental designs, and thus, their causal characteristics remain unknown. Second, minority students are rarely disaggregated within these studies or serve as the target populations for investigations. Consequently, our knowledge base about African American and Hispanic students is not established, and it cannot be assumed to be identical to the knowledge base for European Americans. The exception is that Asian students, including Taiwanese, Hong Kong, Chinese, and Korean populations have been investigated from the viewpoint of effects of classroom practices on motivational outcomes (Jang, Reeve, Ryan, & Kim, 2009; Lau, 2009; Shih, 2008; Zhou et al., 2009).

Third, students who are low achieving in reading have not been the focus of a sufficient number of investigations. For example, it is unknown whether the effects of behavioral engagement on reading competence are higher, lower, or the same for low-achieving readers in comparison to average- or high-achieving readers. As noted by Quirk and Schwanenflugel (2004), most reading programs for low achievers are strongly cognitive and tend to neglect motivational practices, although researchers would agree that explicitly supporting self-efficacy would be valuable for this population.

Fourth, motivation for reading electronic text should be studied. Although students are intrinsically motivated by interacting with electronic media, relatively few studies have been conducted that examine how students' motivation and competence are impacted by reading digital text (see Mills, 2010, for review of this work). As Jang (2008) found, interest was not associated with learning from uninteresting text, and it is possible that interest regulation is not associated with learning from highly interesting electronic media due to its relatively high interest level. Because electronic text is nearly universal in schools, homes, and students' backpacks, it seems warranted examining whether motivation, behavioral engagement, and competence in the domain of electronic text interaction is subject to the same principles as traditional interaction with printed text. It is conceivable that electronic text is highly motivating due to the autonomy, efficacy, and apparent value it affords the student. If so, academic learning may be accelerated through instructional use of this medium, and properties of the medium may have motivational impacts on motivation, learning, and achievement.

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