The Making of the Motivated Strategies for Learning Questionnaire

Teresa García Duncan

American Institutes for Research
Washington, DC

Wilbert J. McKeachie

Department of Psychology
University of Michigan

The goal of this article is to discuss one of Paul Pintrich's more enduring legacies: the Motivated Strategies for Learning Questionnaire (MSLQ), an 81-item, self-report instrument consisting of 6 motivation subscales and 9 learning strategies scales. The MSLQ has proven to be a reliable and useful tool that can be adapted for a number of different purposes for researchers, instructors, and students. The MSLQ has been translated into multiple languages and has been used by hundreds of researchers and instructors throughout the world. This article reviews the history of the MSLQ and discusses how it has been used to (a) address the nature of motivation and use of learning strategies in different types of content areas and target populations; (b) help refine our theoretical understanding of motivational constructs, how they are distinct from one another, and what individual differences exist in self-regulated learning; and (c) evaluate the motivational and cognitive effects of different aspects of instruction.

The interplay between motivation and cognition is a central theme of Paul Pintrich's work. Among his many contributions to the field of educational psychology was to make a contextualized, social-cognitive model of learning the dominant paradigm. Paul published widely and prolifically on the interface between "cold" cognition and "hot" motivation, stressing the importance of the motivation–cognition dynamic in student performance and in lifelong learning (e.g., Harackiewicz, Barron, Pintrich, Elliot, & Thrash 2002; Linnenbrink & Pintrich, 2002; Pintrich, 1988a, 1988b, 1989, 2000, 2003; Pintrich & De Groot, 1990; Pintrich & García, 1991; Pintrich, McKeachie, & Lin, 1987; Zusho, Pintrich, & Coppola, 2003; see also the articles in this special issue for further discussion of how Paul conceptualized relations of motivation and cognition). Our goal here is to discuss one of Paul's more enduring legacies: the Motivated Strategies for Learning Questionnaire, or the MSLQ, (Pintrich, Smith, García, & McKeachie, 1991, 1993).

Prior to the MSLQ, much of the research on college student learning concentrated on individual differences or learning styles (e.g., introversion–extroversion; field dependence or independence; Myers–Briggs profiles) whose links to students' actual study behavior or to students' cognitive processing were not entirely clear (e.g., Lockhart and Schmeck, 1984; Torrance, Reynolds, Riegel, & Ball, 1977). In addition, the study skill inventories used at the time to measure college student learning (e.g., Brown & Holtzman, 1967; Christensen, 1968; Goldman & Warren, 1973) were criticized for being atheoretical (e.g., Weinstein & Underwood, 1985). There was a genuine need for a tool to assess students' motivation and learning strategies to help students and faculty improve learning.

The MSLQ was developed using a social-cognitive view of motivation and learning strategies, with the student represented as an active processor of information whose beliefs and cognitions mediated important instructional input and task characteristics. The social-cognitive theoretical framework on which the MSLQ was founded assumes that motivation and learning strategies are not traits of the learner, but rather that motivation is dynamic and contextually bound and that learning strategies can be learned and brought under the control of the student. That is, that students' motivation varies for different courses (e.g., more interest or value in an elective course vs. a required course; more efficacy for an

---

easier course in psychology in comparison to a difficult mathematics or physics course) and that their strategy use might vary as well depending on the nature of the academic tasks (e.g., multiple-choice vs. essay exams). In addition, the MSLQ was designed to focus on the course level, with the reasoning being that the course was the most appropriate level of analysis, situated between the very general and global level of all learning situations and the impractical and unwieldy level of every specific situation within one course. This operationalization of motivation and cognition also distinguished the MSLQ from another widely used self-report instrument, the Learning and Study Strategies Inventory (the LASSI; Weinstein, Palmer, & Schulte, 1987), which assessed learning strategies and attitudes toward learning at a general level. By focusing on the roles of both motivation and cognition in the classroom, the MSLQ also reflected the research on self-regulated learning, which emphasized the interface between motivation and cognition (Schunk & Zimmerman, 1994; Zimmerman & Schunk, 1989).

The MSLQ has been used in numerous research studies, as is described in more detail later. It also can be used in courses for self-evaluative purposes. For instance, faculty members can use the MSLQ to obtain feedback on their students and to help guide decisions about course adjustments; students can use it for self-diagnosis of their strengths and weaknesses in any of their courses. To date, the MSLQ has been translated into multiple languages and has been used by hundreds of researchers and instructors throughout the world, including Argentina, Australia, Brazil, Canada, Chile, China, Croatia, Cyprus, Egypt, India, Iraq, Japan, Malaysia, the Philippines, Russia, Turkey, the United Kingdom, and of course, the United States. Indeed, there exist two formal assessments of the validity and reliability of the MSLQ in other languages: in Spanish (Roces, Tourón, & Gonzalez, 1995), and in Chinese (Sachs, Law, & Chan, 2001). In short, the MSLQ has proven to be a reliable and useful tool that can be adapted for a number of different purposes for researchers, instructors, and students.

THE DEVELOPMENT OF THE MSLQ

The seeds of the MSLQ were planted in the early 1980s, when Bill McKeachie and Paul Pintrich received a National Science Foundation grant to develop and do research on a Learning to Learn course for college undergraduates (see McKeachie, Pintrich, & Lin, 1985; Pintrich, McKeachie, & Lin, 1987). The pre-MSLQ instruments were used to evaluate the effectiveness of the Learning to Learn course and varied in length from 50 to 140 items during the period of 1982 to 1986. These early instruments were used with over 1,000 University of Michigan undergraduates and were continuously refined. These instruments underwent the usual statistical and psychometric analyses, including internal reliability coefficient computation, factor analyses, and correlations

with academic performance and aptitude measures (e.g., Scholastic Aptitude Test scores).

The formal development of the MSLQ began in 1986, when the Office of Educational Research and Improvement awarded the University of Michigan a 5-year grant to establish the National Center for Research to Improve Postsecondary Teaching and Learning. Bill and Paul headed Program B, which focused on research on college student learning in general. Teresa García then joined the research team as a graduate student and became an active collaborator. Our College Student Research Group also benefited from the invaluable contributions made by Moshe Naveh-Benjamin, Yi-Guang Lin, Stuart Karabenick, David Smith, Scott VanderStoep, Robert Doljanac, Donna Kempf, Susan Reiter, Barbara Hofer, and Shirley Yu.

We conducted a number of correlational field studies of college student learning during this program of research (see Pintrich, 1989; Pintrich & García, 1991) and developed the general model of college student motivation and self-regulated learning (see McKeachie, Pintrich, Smith, Lin, & Sharma, 1990; Pintrich, 1988a, 1988b), on which the MSLQ is based (see Pintrich et al., 1993). The correlational studies we carried out on over 2,000 students during the 5 years of funding for the National Center for Research to Improve Postsecondary Teaching and Learning have shown fairly consistent results. In general, students who use more deep-processing strategies such as elaboration and organization and who attempt to control their cognition and behavior through the use of metacognitive planning, monitoring, and regulating strategies are more likely to do better in their course assignments, exams, and papers as well as overall course grade. In addition, students with positive motivational beliefs such as holding intrinsic goals for learning, high self-efficacy and task value, and lower levels of test anxiety tend to engage in deep-processing strategies and metacognitive regulation, compared to students with less adaptive motivational beliefs (e.g., Pintrich & García, 1991).

The development of the MSLQ involved three major waves of data collection in 1986, 1987, and 1988. The first wave of data collected in 1986 included 326 students; the second wave in 1987 included 687 students; and the third wave in 1988 included 758 students. After each of these waves we analyzed the data, rewrote items, and refined the conceptual model underlying our instrument. Based on both theoretical and empirical analyses, we revised items and constructed scales. The final version of the MSLQ presented in this article represents the culmination of our development work.

COMPONENTS OF THE MSLQ

The MSLQ consists of a motivation section and a learning strategies section. The motivation section comprises 31 items that assess students' goals and value beliefs for a course, their beliefs about their skills to succeed in a course, and their anx-

iety about tests in a course. The learning strategy section contains 31 items regarding students' use of different cognitive and metacognitive strategies. In addition, the learning strategies section includes 19 items concerning student management of different resources.

The final version of the MSLQ includes 81 items. Items are scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*). Scale scores are constructed by taking the mean of the items that make up that scale. For example, intrinsic goal orientation has four items (see Table 1 and Appendix). An individual's score for intrinsic goal orientation would be computed by summing the four items and taking the average. Some scales contain negatively worded items, and the ratings for those items should be reversed before an individual's score is computed, so that the statistics reported represent the positive wording of all the items and higher scores indicate greater levels of the construct of interest.

The 15 scales on the MSLQ can be used together or singly. The scales are designed to be modular and can be used to fit the needs of the researcher or instructor. The instrument was designed to be given in class and takes approximately 20–30 min to administer. Because the MSLQ was designed to be used at the course level, we have not developed norms for the instrument. Local norms can certainly be developed for different courses or instructors at a particular institution if norms are desired for comparative purposes. However, the constructivist, social-cognitive model on which the MSLQ is based assumes that students' responses to the questions might vary as a function of different courses, so that the same individual might report different levels of motivation or strategy use depending on the course.

MSLQ Motivation Scales and Their Properties

The motivational scales are based on three general motivational constructs (Pintrich, 1988a, 1988b, 1989): expectancy, value, and affect. Expectancy components refer to students' beliefs that they can accomplish a task, and two MSLQ subscales are directed toward assessing perceptions of self-efficacy and control beliefs for learning. Our definition and measurement of self-efficacy is a bit broader than other measures (e.g., the LASSI; Weinstein, Zimmerman, & Palmer, 1988) in that both expectancy for success (which is specific to task performance) and judgments of one's ability to accomplish a task and confidence in one's skills to perform a task are collapsed within the general term *self-efficacy*. In addition, students' perceptions of control over their achievement outcomes are measures; control beliefs for learning refer to students' beliefs that outcomes are contingent on one's own effort, rather than external factors such as the teacher or luck.

Value components focus on the reasons students engage in an academic task, and the values scales included in the MSLQ are based both in achievement goal theory and expectancy–value theory. Three subscales are included in the MSLQ to measure value beliefs: intrinsic goal orientation (a focus on learning and mastery); extrinsic goal orientation (a focus on grades and approval from others); and task value beliefs (judgments of how interesting, useful, and important the course content is to the student. The third general motivational construct is affect and has been operationalized in terms of responses to the test anxiety scale, which taps into students' worry and concern over taking exams.

MSLQ Cognitive Scales and Their Properties

The learning strategies section of the MSLQ consists of three general types of scales: cognitive, metacognitive, and resource management. Cognitive strategies include students' use of basic and complex strategies for the processing of information from texts and lectures. The most basic cognitive strategy subscale provides a measure of the use of rehearsal by students (e.g., repeating the words over and over to oneself to help in the recall of information). The use of more complex strategies is measured by two subscales concerning the use of elaboration strategies (e.g., paraphrasing, summarizing) and organization strategies (e.g., outlining, creating tables). In addition, a subscale on critical thinking is included that assesses students' use of strategies to apply previous knowledge to new situations or make critical evaluations of ideas. The second general category is metacognitive control strategies, measured by one large subscale related to the use of strategies that help students control and regulate their own cognition. This subscale includes planning (setting goals), monitoring (of one's comprehension), and regulating (e.g., adjusting reading speed depending on the task).

The third general strategy category is resource management, which includes four subscales on students' regulatory

TABLE 1
Coefficient Alphas and Items Comprising the 15
MSLQ Scales

Scale	Items Comprising the Scale	α
Motivation scales		
Intrinsic Goal Orientation	1, 16, 22, 24	.74
Extrinsic Goal Orientation	7, 11, 13, 30	.62
Task Value	4, 10, 17, 23, 26, 27	.90
Control of Learning Beliefs	2, 9, 18, 25	.68
Self-Efficacy for Learning and Performance	5, 6, 12, 15, 20, 21, 29, 31	.93
Test Anxiety	3, 8, 14, 19, 28	.80
Learning strategies scales		
Rehearsal	39, 46, 59, 72	.69
Elaboration	53, 62, 64, 67, 69, 81	.75
Organization	32, 42, 49, 63	.64
Critical Thinking	38, 47, 51, 66, 71	.80
Metacognitive Self-Regulation	33r, 36, 41, 44, 54, 55, 56, 57r, 61, 76, 78, 79	.79
Time and Study Environment Management	35, 43, 52r, 65, 70, 73, 77r, 80r	.76
Effort Regulation	37r, 48, 60r, 74	.69
Peer Learning	34, 45, 50	.76
Help Seeking	40r, 58, 68, 75	.52

strategies for controlling resources other than their cognition. These strategies include managing one's time and study environment (e.g., using one's time well, having an appropriate place to study), as well as regulation of one's effort (e.g., persisting in the face of difficult or boring tasks). Finally, the remaining two subscales, peer learning (e.g., using a study group or friends to help learn) and help-seeking (e.g., seeking help from peers or instructors when needed) focus on the use of others in learning.

RESEARCH USING THE MSLQ

Table 2 represents a small, current sampling (2000–2004) of how the MSLQ has been used in empirical research and illustrates how useful and useable it is. The MSLQ—both the college version (Pintrich et al., 1993) and the junior high school version (Pintrich & De Groot, 1990)—have been used in different languages, in different countries, and on diverse samples and settings to address both theoretical and applied purposes.

The MSLQ, either in its entirety or its subscales, has been used frequently to address the nature of motivation and use of learning strategies across (a) content areas, including undergraduate statistics (Bandalos, Finney, & Geske, 2003), undergraduate chemistry (Zusho, Pintrich, & Coppola, 2003), high school social studies (Brookhart & Durkin, 2003), and middle school physical education (Ommundsen, 2003), as well as (b) target populations, including African American undergraduates (Campbell, 2001; Green, 2001), female undergraduate engineering majors (Vogt, 2003), nursing students (Seibert, 2002), and gifted high school students (Hong & Aqui, 2004; Neber & Heller, 2002).

The MSLQ has been used to help refine our theoretical understanding of the between- and within-domain specificity of motivational constructs (e.g., Bong, 2001, 2004), to explore the nature of multiple goals (e.g., Smith, Duda, Allen, & Hall, 2002; Suarez, Gonzalez, & Valle, 2001), and to understand more deeply the individual differences that exist in self-regulated learning (e.g., Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; McKeachie, Lin, & Middleton, 2004; McKenzie & Gow, 2004; Perry, Hladkyj, Pekrun, & Pelletier, 2001; Polleys, 2001; Wolters, 2003).

Perhaps the most frequent use of the MSLQ is for evaluating the effects of courses on students. The MSLQ has been used to assess the motivational and cognitive effects of different aspects of instruction, including (a) instructional strategies such as case-based versus lecture–discussion approaches (Barise, 2000; Wilke, 2003), coaching (Hamman, Berthelot, Saia, & Crowley, 2000), verbal praise (Hancock, 2002), constructivist versus objectivist instruction (Hargis, 2001), and reciprocal peer tutoring (Rittschof & Griffin, 2001); (b) course structures, such as different levels of instructional control (Eom & Reiser, 2000; Eshel & Kohavi, 2003), use of cooperative learning (Hancock, 2004), and

classroom goal structures (Karabenick, 2004; Wolters, 2004); (c) interventions, including those for gifted and talented students (e.g., Neber & Heller, 2002) as well as for developmental students (Ray, 2003); and finally (d) educational technology, such as different types of multimedia designs (Liu, 2003), Internet-based, online, or computer-based instruction (Eom & Reiser, 2000; Hancock, Bray, & Nason, 2002; Hargis, 2001; McManus, 2000; Miltiadou, 2001; Niemi, Nevgi, & Virtanen, 2003), and video teleconferencing (Seibert, 2002).

The MSLQ is also used widely in purposes other than research and publication. A Google™ search on the terms *MSLQ* or *Motivated Strategies for Learning Questionnaire* will generate hundreds of hits, not only of formal citations of the MSLQ but also of online versions of the MSLQ that instructors have used for their classes or that student advising or student learning centers have implemented as a form of needs assessment. Indeed, departments of student development and offices of student affairs represent a large portion of those who have requested copies of the MSLQ manual from the University of Michigan.[1]

As coauthors of the MSLQ, we are delighted to see how our work has resulted in this breadth and variety of uses. The MSLQ is not a fixed entity being sold by a publisher; it is in the public domain, and we have always intended that the MSLQ be used in whatever ways will meet the needs of potential users. Accordingly, we encourage users to use the MSLQ in its entirety or to select whatever subscales are relevant for their purposes, in whatever format is most practical. As demonstrated by our Google results, some instructors have put the MSLQ online for their students to use; here at the University of Michigan, we have made a self-scored version of the MSLQ to assess the effects of Bill McKeachie's Learning to Learn class (Hofer & Yu, 2003; Pintrich, McKeachie, & Lin, 1987).

CONCLUSION

The empirical links among motivation, learning strategies, and performance are well established; indeed, a recent meta-analysis showed that self-efficacy and achievement motivation had the strongest effects on college grade point average (Robbins, Lauver, Le, Davis, & Langley, 2004). Because of its flexibility and functionality, we anticipate continued interest in the MSLQ, particularly as researchers, instructors, and student development staff from different disciplines (e.g., medicine, nursing, educational technology) become more interested in the roles of motivation and self-regulation in student learning and achievement.

---

[1]Please send requests for the MSLQ Manual to Marie Bien at the University of Michigan (mabien@umich.edu; telephone (734) 647-0626; fax (734) 615-2164).

TABLE 2
A Sample of Empirical Studies Using the MSLQ, 2000–2004

Citation	MSLQ Portion	Sample	Language	Country	MSLQ Used to Address:
Andreou & Metallidou (2004)	Self-efficacy subscale	4th- to 6th-grade students	Greek	Greece	The relation between academic self-efficacy and bullying among elementary school students
Andreou (2004)	Self-efficacy subscale	4th- to 6th-grade students	Greek	Greece	The relation between academic self-efficacy and bullying among elementary school students
Bandalos, Finney, & Geske (2003)	Self-efficacy subscale and learning strategies subscales	Undergraduate college students	English	United States	The effects of motivation and learning strategies on performance in college statistics classes
Barise (2000)	Entire MSLQ	Undergraduate college students	English	Canada	The effect of case-based instruction versus the lecture–discussion method on social work majors' motivation and self-regulated learning
Bong & Hocevar (2002)	Self-efficacy subscale	High school students	English and Korean	United States and South Korea	The convergent and discriminant validity of self-efficacy measures
Bong (2001)	Self-efficacy subscale	Junior and high school students	Korean	South Korea	Between- and within-domain relations of motivational constructs
Bong (2004)	Self-efficacy subscale	High school students	Korean	South Korea	The domain-specificity/generalizability of academic self-efficacy
Brookhart & Durkin (2003)	Self-efficacy subscale	High school students	English	United States	The relations among student motivation, classroom assessment, and achievement in high school social studies classes
Campbell (2001)	Entire MSLQ	Undergraduate college students	English	United States	The relations among motivational strategies, learning strategies, and motivation in African American business majors
Chen, Gully, & Eden (2004)	Self-efficacy subscale	Adults	English	United States	The relation between self-efficacy and affect in academic and work settings
Cheung, Rudowicz, Lang, Yue, & Kwan (2001)	Entire MSLQ	Undergraduate college students	English	Hong Kong	The relations among motivation, critical thinking, and family background
Davenport (2003)	Entire MSLQ	Undergraduate college students	English	United States	The factorial, structural, and predictive validity of the MSLQ
Dutton (2003)	Metacognitive self-regulation subscale	Undergraduate college students	English	United States	The effects of epistemological beliefs, motivation, and metacognition on performance in case-based classes
Eom & Reiser (2000)	JHS MSLQ	6th- and 7th-grade students	English	United States	The effects of self-regulation and instructional control on performance and motivation in computer-based instruction
Eshel & Kohavi (2003)	JHS MSLQ	6th-grade students	Hebrew	Israel	The relations among classroom control, self-regulated learning strategies, and academic achievement
Green (2001)	Motivation subscales	Undergraduate college students	English	United States	Achievement motivation among African American college students
Hamman, Berthelot, Saia, & Crowley (2000)	Entire MSLQ	Middle school students	English	United States	The effects of teachers' coaching of learning on students' motivation and use of learning strategies
Hancock (2002)	Motivation subscales	Graduate students	English	United States	The effects of verbal praise on graduate students' classroom achievement, homework habits, and motivation to learn
Hancock (2004)	Motivation subscales	Graduate students	English	United States	The effects of cooperative learning and peer orientation on motivation
Hancock, Bray, & Nason (2002)	Motivation subscales	Undergraduate college students	English	United States	The effects on instructional methods and students' conceptual levels on achievement and motivation in a technology course
Harackiewicz, Barron, Tauer, Carter, & Elliott (2000)	Learning strategy subscales	Undergraduate college students	English	United States	The predictors of interest and performance
Hargis (2001)	Entire MSLQ	Undergraduate college students	English	United States	The effects of constructivist versus objectivist Internet-based science instruction on students' self-regulated learning
Hofer & Yu (2003)	Entire MSLQ	Undergraduate college students	English	United States	The effects of a learning to learn course on students' motivation and self-regulated learning

(*continued*)

TABLE 2 (Continued)

Citation	MSLQ Portion	Sample	Language	Country	MSLQ Used to Address:
Hong & Aqui (2004)	Entire MSLQ	High school students	English	United States	The cognitive and motivational characteristics of mathematically gifted students
Jacobson (2000)	Entire MSLQ	Undergraduate college students	English	United States	Differences between traditional and nontraditional students on the MSLQ
Karabenick (2004)	Entire MSLQ	Undergraduate college students	English	United States	The relation between achievement goal structure and help seeking
Liu (2003)	Resource management subscales	Middle school students	English	United States	The enhancing effects of multimedia design on students' cognitive skills
Livingston (2000)	Entire MSLQ	Undergraduate college students	English	United States	College students' postcourse strategy use
Longo (2000)	Entire MSLQ	Undergraduate college students	English	United States	The relation between identity style and self-regulated learning
McKeachie, Lin, & Middleton (2004)	Entire MSLQ	Undergraduate college students	English	United States	The motivational, cognitive, and performance profiles of two types of low test-anxious (low-worry) students
McKenzie & Gow (2004)	Learning strategy subscales	Undergraduate college students	English	Australia	The achievement and motivation of school leavers and nontraditional university students
McManus (2000)	Entire MSLQ	Undergraduate college students	English	United States	The effect of different Web-based hypermedia environments on high versus low self-regulating students' performance
Miltiadou (2001)	Motivation subscales	Undergraduate college students	English	United States	Motivational predictors of success in an online course
Monetti (2002)	Metacognitive self-regulation subscale	Undergraduate college students	English	United States	The effects of self-regulated learning and epistemological beliefs on achievement
Neber & Heller (2002)	JHS MSLQ	High school students	German	Germany	The effects of a summer school program on highly gifted secondary school students
Niemi, Nevgi, & Virtanen (2003)	Metacognitive self-regulation subscale	Undergraduate college students	Finnish	Finland	The nature of self-regulation in Web-based learning
Ommundsen (2003)	Learning strategy subscales	Middle school students	Norwegian	Norway	The relation between theories of ability and self-regulation strategies in physical education classes
Ostovar & Khayyer (2004)	Entire MSLQ	Undergraduate college students	Farsi	Iran	The relation between motivation and learning strategies
Perry, Hladkyj, Pekrun, & Pelletier (2001)	Learning strategy subscales	Undergraduate college students	English	Canada	The effects of academic control and action control on students' motivation, affect, self-regulated learning, and achievement
Polleys (2001)	Entire MSLQ	Undergraduate college students	English	United States	The relations among self-regulated learning, personality, and achievement

Study	MSLQ portion used	Sample	Language	Country	Description
Rao, Moely, & Sachs (2000)	Entire MSLQ	High school students	Chinese	Hong Kong	Differences in motivation, learning strategies, and mathematics performance between high- and low-achieving Chinese secondary school students
Ray (2003)	Learning strategy subscales	Undergraduate college students	English	United States	The relations among aptitude, achievement, motivation, and self-regulated learning among developmental college students
Rittschof & Griffin (2001)	Test anxiety and self-efficacy subscales	Undergraduate college students	English	United States	The effects of reciprocal peer tutoring on students' motivation and understanding of course content
Sachs, Law, & Chan (2002)	Entire MSLQ	Junior high school students	Chinese	Hong Kong	The relation between the MSLQ and the Learning Process Questionnaire
Sachs, Law, Chan, & Rao (2001)	Entire MSLQ	Junior high school students	Chinese	Hong Kong	A nonparametric item analysis of the Chinese version of the MSLQ
Seibert (2002)	Motivation subscales	Graduate students	English	United States	The relations among knowledge, motivation, and clinical expertise on nursing students' engagement in a video teleconferencing environment
Smith, Duda, Allen, & Hall (2002)	Test anxiety and effort regulation subscales	Undergraduate college students	English	United States	The similarities and differences among three measures of approach and avoidance goal orientations
Sperling, Howard, Staley, & DuBois (2004)	Metacognitive self-regulation subscale	Undergraduate college students	English	United States	The relations among metacognition, strategy use, and motivation
Suarez, Gonzalez, & Valle (2001)	Learning strategy subscales	Undergraduate college students	Spanish	Spain	The relations between multiple goals and students' motivation and learning strategies
Turner & Schallert (2001)	Motivation subscales	Undergraduate college students	English	United States	The expectancy–value predictors of shame and shame resiliency
VanZile–Tamsen (2001)	Entire MSLQ	Undergraduate college students	English	United States	The predictive power of motivation on use of self-regulated learning strategies
Vogt (2003)	Self-efficacy subscale	Undergraduate college students	English	United States	Self-efficacy among female undergraduate engineering majors
Wilke (2003)	Entire MSLQ	Undergraduate college students	English	United States	The motivational and cognitive effects of active versus lecture-based instructional approaches
Wolters (2003)	Learning strategy subscales	Undergraduate college students	English	United States	The relation between academic procrastination and components of self-regulated learning
Wolters (2004)	Learning strategy subscales	Junior high school students	English	United States	The effect of goal structures on students' motivation and cognition
Zusho, Pintrich, & Coppola (2003)	Entire MSLQ	Undergraduate college students	English	United States	The effects of motivation and learning strategies on performance in college chemistry classes

Note. JHS MSLQ = Junior High School Motivated Strategies for Learning Questionnaire.

Given the wide range of possible uses and the interest in the MSLQ from different stakeholders in different disciplines and across different countries, we should also remind MSLQ users about the limitations of self-report instruments. Although the MSLQ can be administered easily and scored and prepared for complex data analyses fairly quickly, it, like other self-report instruments, is subject to questions regarding reliability and validity (García & Pintrich, 1995).

Reliability of a measure is generally thought of in terms of stability over time and contexts, as well as by internal consistency. Traditional measures of the stability aspect of reliability are difficult to use for instruments that are intended to tap into constructs that are context dependent. Students' reports of motivation and learning strategies are situationally bound, and context moderates students' responses regarding what they believe and what they do. It may well be the case that the most adaptive or self-regulated learners modify and change their beliefs and strategies as a function of the task or content, but we should always exercise caution in how the results of self-report measures of motivation and learning strategies are interpreted (García & Pintrich, 1995; Hadwin, Winne, Stockley, Nesbit, & Woszczyna, 2001). The internal consistency aspect of reliability is also an issue with self-report measures. In our MSLQ work, somewhat different factor structures emerge from our questionnaire data with junior high school and college students (Pintrich & De Groot, 1990; Pintrich et al., 1993), but the results still fit within our general conceptual model. Future research needs to address whether these developmental differences in factor structures are a function of method variance or actually reflect developmental differences in motivation and cognition.

The validity of self-reports has been challenged throughout the history of empirical psychology, with social desirability being a particular concern. Although social desirability response bias should always be kept in mind when interpreting self-report data, we have found in our work on the MSLQ that measures of response bias did not account for any significant amount of variance and did not change our final results. We acknowledge that actual observations or behavioral indicators of strategy use provide better construct validity than does a self-report questionnaire such as the MSLQ. Behavioral measures can be used to address the more basic, microlevel cognitive processes that make up cognitive and metacognitive strategy use (Howard-Rose & Winne, 1993). However, although behavioral measures can help us understand which of the many possible cognitive strategies contribute most to learning and performance, a self-report measure of strategy use can help us decide, at a more global level, if any cognitive or metacognitive strategy use is taking place. For example, in our work with the MSLQ, we have found over and over again that the three general aspects of metacognition—planning, monitoring, and regulating—do not load into separate factors in a factor analyses but load into one factor. Of course, we would not want to conclude that the theoretical distinctions between planning, monitoring, and regulating are not useful. We would

leave the explication of the relations among the three aspects of metacognition to more experimental studies where the processes could be examined in more microlevel detail. However, our results do suggest that when students engage in some aspects of metacognition, they tend to report doing all three aspects and they also do better in terms of actual achievement, which is in line with our general assumptions about self-regulated learning.

We consider the MSLQ to be an efficient, practical, and ecologically valid measure of students' motivation and learning strategies. Although the MSLQ has, as do all self-report instruments, some measurement limitations and trades some internal validity for external validity, we are confident that the MSLQ represents a viable means for assessing student motivation and use of learning strategies in the classroom. As demonstrated by this and the other pieces in this special issue, Paul Pintrich's work has genuinely advanced motivation theory and research. The MSLQ is one of his most enduring contributions because it can be used for both empirical research and for applied purposes. Although Paul would have been too modest to acknowledge this, we like to think that the MSLQ is a product of "use-inspired basic research" (Stokes, 1997) and that it can be justly located as belonging in Pasteur's quadrant for its ability to be used for both scientific investigations and practical applications (cf. Pintrich, 2003).

REFERENCES

Andreou, E. (2004). Bully/victim problems and their association with Machiavellianism and self-efficacy in Greek primary school children. *British Journal of Educational Psychology*, *74*(2), 297–309.

Andreou, E., & Metallidou, P. (2004). The relationship of academic and social cognition to behaviour in bullying situations among Greek primary school children. *Educational Psychology*, *24*(1), 27–41.

Bandalos, D. L., Finney, S. J., & Geske, J. A. (2003). A model of statistics performance based on achievement goal theory. *Journal of Educational Psychology*, *95*(3), 604–616.

Barise, A. (2000). The effectiveness of case-based instruction vs. the lecture-discussion method in multicultural social work. *Dissertation Abstracts International*, *61*(6-A), 2181.

Bong, M. (2001). Between- and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task-value, and achievement goals. *Journal of Educational Psychology*, *93*(1), 23–34.

Bong, M. (2004). Academic motivation in self-efficacy, task value, achievement goal orientations, and attributional beliefs. *Journal of Educational Research*, *97*(6), 287–297.

Bong, M., & Hocevar, D. (2002). Measuring self-efficacy: Multitrait–multimethod comparison of scaling procedures. *Applied Measurement in Education*, *15*(2), 143–172.

Brookhart, S. M., & Durkin, D. T. (2003). Classroom assessment, student motivation, and achievement in high school social studies classes. *Applied Measurement in Education*, *16*(1), 27–54.

Brown, W., & Holtzman, W. (1967). *Survey of study habits and attitudes.* New York: Psychological Corporation.

Campbell, M. M. (2001). Motivational strategies, learning strategies and the academic performance of African-American students in a college business environment: A correlational study. *Dissertation Abstracts International*, *62*(2-A), 432.

Chen, G., Gully, S. M., & Eden, D. (2004). General self-efficacy and self-esteem: Toward theoretical and empirical distinction between correlated self-evaluations. *Journal of Organizational Behvaior, 25,* 375–395.

Cheung, C. K., Rudowicz, E., Lang, G., Yue, X. D., & Kwan, A. S. F. (2001). Critical thinking among university students: Does the family background matter? *College Student Journal, 35*(4), 577–597.

Christensen, F. A. (1968). *College adjustment and study skills inventory.* Berea, OH: Personal Growth.

Davenport, M. A. (2003). Modeling motivation and learning strategy use in the classroom: An assessment of the factorial, structural, and predictive validity of the motivated strategies for learning questionnaire. *Dissertation Abstracts International*, *64*(2-A), 394.

Dutton, R. A. (2003). The impact of epistemology, motivation, and metacognition on performance in case-based classes. *Dissertation Abstracts International*, *64*(4-A), 1172.

Eom, Y., & Reiser, R. A. (2000). The effects of self-regulation and instructional control on performance and motivation in computer-based instruction. *International Journal of Instructional Media*, *27*(3), 247–261.

Eshel, Y., & Kohavi, R. (2003). Perceived classroom control, self-regulated learning strategies, and academic achievement. *Educational Psychology*, *23*(3), 249–260.

García, T., & Pintrich, P. R. (1995). Assessing students' motivation and learning strategies in the classroom context: The Motivated Strategies for Learning Questionnaire. In M. Birenbaum & F. Dochy (Eds.), *Alternatives in assessment of achievements, learning processes, and prior knowledge* (pp. 319–339). Norwell, MA: Kluwer Academic.

Goldman, R., & Warren, R. (1973). Discriminant analysis of study strategies connected with college grade success in different major fields. *Journal of Educational Measurement, 10,* 39–47.

Green, A. L. (2001). The perceived motivation for academic achievement among African American college students. *Dissertation Abstracts International*, *61*(10-A), 3889.

Hadwin, A. F., Winne, P. H., Stockley, D. B., Nesbit, J. C., & Woszczyna, C. (2001). Context moderates students' self-reports about how they study. *Journal of Educational Psychology*, *93*(3), 477–487.

Hamman, D., Berthelot, J., Saia, J., & Crowley, E. (2000). Teachers' coaching of learning and its relation to students' strategic learning. *Journal of Educational Psychology*, *92*(2), 342–348.

Hancock, D. R. (2002). Influencing graduate students' classroom achievement, homework habits and motivation to learn with verbal praise. *Educational Research*, *44*(1), 83–95.

Hancock, D. (2004). Cooperative learning and peer orientation effects on motivation and achievement. *Journal of Educational Research*, *97*(3), 159–166.

Hancock, D. R., Bray, M., & Nason, S. A. (2002). Influencing university students' achievement and motivation in a technology course. *Journal of Educational Research*, *95*(6), 365–372.

Harackiewicz, J. M., Barron, K. E., Pintrich, P. R., Elliot, A. J., & Thrash, T. M. (2002). Revision of achievement goal theory: Necessary and illuminating. *Journal of Educational Psychology*, *94*(3), 638–645.

Harackiewicz, J. M., Barron, K. E. Tauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short-term and long-term consequences of achievement goals: Predicting interest and performance over time. *Journal of Educational Psychology*, *92*(2), 316–330.

Hargis, J. (2001). Can students learn science using the Internet? *Journal of Research on Computing in Education*, *33*(4), 475–488.

Hofer, B. K., & Yu, S. L. (2003). Teaching self-regulated learning through a "Learning to Learn" course. *Teaching of Psychology*, *30*(1), 30–33.

Hong, E., & Aqui, Y. (2004). Cognitive and motivational characteristics of adolescents gifted in mathematics: Comparisons among students with different types of giftedness. *Gifted Child Quarterly*, *48*(3), 191–201.

Howard-Rose, D., & Winne, P. (1993). Measuring component and sets of cognitive processes in self-regulated learning. *Journal of Educational Psychology, 85,* 591–604.

Jacobson, R. M. (2000). Differences between traditional and nontraditional students on the Motivated Strategies for Learning Questionnaire. *Dissertation Abstracts International*, *61*(3-A), 879.

Karabenick, S. A. (2004). Perceived achievement goal structure and college student help seeking. *Journal of Educational Psychology*, *96*(3), 569–581.

Linnenbrink, E. A., & Pintrich, P. R. (2002). Motivation as an enabler for academic success. *School Psychology Review*, *31*(3), 313–327.

Liu, M. (2003). Enhancing learners' cognitive skills through multimedia design. *Interactive Learning Environments*, *11*(1), 23–39.

Livingston, J. A. B. (2000). A qualitative study of university students' post-course strategy use. *Dissertation Abstracts International*, *61*(5-A), 1742.

Lockhart, D., & Schmeck, R. (1984). Learning styles and classroom evaluation methods: Different strokes for different folks. *College Student Journal, 17,* 94–100.

Longo, N. S. (2000). The relationship between identity style and self-regulated learning. *Dissertation Abstracts International*, *60*(12-A), 4318.

McKeachie, W. J., Lin, Y. G., & Middleton, M. J. (2004). Two types of low test-anxious (low-worry) students. *Counseling & Clinical Psychology Journal*, *1*(3), 141–152.

McKeachie, W. J., Pintrich, P. R., & Lin, Y. G. (1985). Teaching learning strategies. *Educational Psychologist, 20,* 153–160.

McKeachie, W. J., Pintrich, P. R., Lin, Y. G., Smith, D. A. F., & Sharma, R. (1990). *Teaching and learning in the college classroom: A review of the research literature.* Ann Arbor: University of Michigan, National Center for Research to Improve Postsecondary Teaching and Learning.

McKenzie, K., & Gow, K. (2004). Exploring the first year academic achievement of school leavers and mature-age students through structural equation modelling. *Learning & Individual Differences*, *14*(2), 107–123.

McManus, T. F. (2000). Individualizing instruction in a Web-based hypermedia learning environment: Nonlinearity, advance organizers, and self-regulated learners. *Journal of Interactive Learning Research*, *11*(2), 219–251.

Miltiadou, M. (2001). Motivational constructs as predictors of success in the online classroom. *Dissertation Abstracts International*, *61*(9-A), 3527.

Monetti, D. M. (2002). A multiple regression analysis of self-regulated learning, epistemology, and student achievement. *Dissertation Abstracts International*, *62*(10-A), 3294.

Neber, H., & Heller, K. A. (2002). Evaluation of a summer-school program for highly gifted secondary-school students: The German Pupils Academy. *European Journal of Psychological Assessment*, *18*(3), 214–228.

Niemi, H., Nevgi, A., & Virtanen, P. (2003). Towards self-regulation in web-based learning. *Journal of Educational Media, 28,* 49–72.

Ommundsen, Y. (2003). Implicit theories of ability and self-regulation strategies in physical education classes. *Educational Psychology*, *23*(2), 141–157.

Ostovar, S., & Khayyer, M. (2004). Relations of motivational beliefs and self-regulated learning outcomes for Iranian college students. *Psychological Reports*, *94*(3), 1202–1204.

Perry, R. P., Hladkyj, S., Pekrun, R. H., & Pelletier, S. T. (2001). Academic control and action control in the achievement of college students: A longitudinal field study. *Journal of Educational Psychology. 93*(4), 776–789.

Pintrich, P. R. (1988a). A process-oriented view of student motivation and cognition. In J. Stark and L. Mets (Eds.), *Improving teaching and learning through research: New directions for institutional research* (Vol. 57, pp. 65–79). San Francisco: Jossey-Bass.

Pintrich, P. R. (1988b). Student learning and college teaching. In R. E. Young and K. E. Eble (Eds.), *College teaching and learning: Preparing for new commitments. New directions for teaching and learning* (Vol. 33, pp. 71–86). San Francisco: Jossey-Bass.

Pintrich, P. R. (1989). The dynamic interplay of student motivation and cognition in the college classroom. In C. Ames and M. L. Maehr (Eds.), *Advances in motivation and achievement: Motivation-enhancing environments* (Vol. 6, pp. 117–160). Greenwich, CT: JAI.

Pintrich, P.R. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of Educational Psychology*, *92*(3), 544–555.

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, *95*(4), 667–686.

Pintrich, P. R., & De Groot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82,* 33–40.

Pintrich, P. R., & García, T. (1991). Student goal orientation and self-regulation in the college classroom. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement: Goals and self-regulatory processes* (Vol. 7, pp. 371–402). Greenwich, CT: JAI.

Pintrich, P. R., McKeachie, J. W., & Lin, Y. G. (1987). Teaching a course in Learning to Learn. *Teaching of Psychology, 14,* 81–86.

Pintrich, P. R., Smith, D. A. F., García, T., & McKeachie, W. J. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ)*. Ann Arbor: University of Michigan, National Center for Research to Improve Postsecondary Teaching and Learning.

Pintrich, P. R., Smith, D. A. F., García, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement, 53,* 801–813.

Polleys, M. S. T. (2001). A study of the relationships between self-regulated learning, personality, and achievement. *Dissertation Abstracts International*, *61*(9-A), 3467.

Rao, N., Moely, B. E., & Sachs, J. (2000). Motivational beliefs, study strategies, and mathematics attainment in high- and low-achieving Chinese secondary school students. *Contemporary Educational Psychology*, *25*(3), 287–316.

Ray, M. W. (2003). The role of aptitude and achievement in developmental college students' motivational beliefs, perceptions of self-regulated learning, and accuracy of grade predictions. *Dissertation Abstracts International*, *64*(3-A), 799.

Rittschof, K. A., & Griffin, B. W. (2001). Reciprocal Peer Tutoring: Re-examining the value of a co-operative learning technique to college students and instructors. *Educational Psychology*, *21*(3), 313–332.

Robbins, S. B., Lauver, K., Le, H., Davis, D., & Langley, R. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, *130*(2), 261–288.

Roces, C., Tourón, J., & Gonzalez, M.C. (1995). Validación preliminar del CEAM II (Cuestionario de Estrategias de Aprendizaje y Motivación II). *Psicológia, 16*(3), 347–366.

Sachs, J., Law, Y. K., & Chan, C. K. K (2001). A nonparametric item analysis of the Motivated Strategies for Learning Questionnaire—Chinese Version. *Psychologia: An International Journal of Psychology in the Orient*, *44*(3), 197–208.

Sachs, J., Law, Y. K., & Chan, C. K. K. (2002). An analysis of the relationship between the Motivated Strategies for Learning Questionnaire and the Learning Process Questionnaire. *Psychologia: An International Journal of Psychology in the Orient*, *45*(3), 193–203.

Sachs, J., Law, Y. K., Chan, C. K. K., & Rao, N. (2001). A nonparametric item analysis of the Motivated Strategies for Learning Questionnaire–Chinese version. *Psychologia, 44,* 197–208.

Schunk, D., & Zimmerman, B. (1994). *Self-regulation of learning and performance: Issues and educational application*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Seibert, D. C. (2002). Effects of engagement principles in a video teleconferencing environment on the development of knowledge, motivation and clinical expertise. *Dissertation Abstracts International*, *63*(6-A), 2136.

Smith, M., Duda, J., Allen, J., & Hall, H. (2002). Contemporary measures of approach and avoidance goal orientations: Similarities and differences. *British Journal of Educational Psychology*, *72*(2), 155–190.

Sperling, R. A., Howard, B. C., Staley, R., & DuBois, N. (2004). Metacognition and self-regulated learning constructs. *Educational Research & Evaluation*, *10*(2), 117–139.

Stokes, D. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Washington, DC: Brookings Institute.

Suarez, J. M., Gonzalez, R., & Valle, A. (2001). Multiple-goal pursuit and its relation to cognitive, self-regulatory, and motivational strategies. *British Journal of Educational Psychology*, *71*(4), 561–572.

Torrance, E. P., Reynolds, C. R., Riegel, T., & Ball, O. (1977). Your style of learning and thinking: Forms A and B. *Gifted Child Quarterly, 21,* 563–573.

Turner, J. E., & Schallert, D. L. (2001). Expectancy-value relationships of shame reactions and shame resiliency. *Journal of Educational Psychology*, *93*(2), 320–329.

VanZile-Tamsen, C. (2001). The predictive power of expectancy of success and task value for college students' self-regulated strategy use. *Journal of College Student Development*, *42*(3), 233–241.

Vogt, C. (2003). An account of women's progress in engineering: A social cognitive perspective. *Journal of Women & Minorities in Science & Engineering*, *9*(3/4), 217–238.

Weinstein, C. E., Palmer, D. R., & Schulte, A. C. (1987). *Learning and study strategies inventory.* Clearwater, FL: H&H Publishers.

Weinstein, C. E., & Underwood, V. L. (1985). Learning strategies: The how of learning. In J. W. Segal, S. F. Chipman, & R. Glaser (Eds.), *Thinking and learning skills: Relating instruction to research* (Vol. 1, pp. 241–258). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Weinstein, C. E., Zimmerman, S. A., & Palmer, D. R. (1988). Assessing learning strategies: The design and development of the LASSI. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: Issues in assessment, instruction, and evaluation* (pp. 25–40). New York: Academic.

Wilke, R. R. (2003). The effect of active learning on student characteristics in a human physiology course for non majors. *Advances in Physiology Education*, *27*(4), 207–220.

Wolters, C. A. (2003). Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology*, *95*(1), 179–187.

Wolters, C. A. (2004). Advancing achievement goal theory: Using goal structures and goal orientations to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology*, *96*(2), 236–250.

Zimmerman, B. J., & Schunk, D. H. (1989). *Self-regulated learning and academic achievement: Theory, research, and practice.* New York: Springer-Verlag.

Zusho, A., Pintrich, P. R., & Coppola, B. (2003). Skill and will: The role of motivation and cognition in the learning of college chemistry. *International Journal of Science Education*, *25*(9), 1081–1094.

APPENDIX

Part A: Motivation

1. In a class like this, I prefer course material that really challenges me so I can learn new things.
2. If I study in appropriate ways, then I will be able to learn the material in this course.
3. When I take a test I think about how poorly I am doing compared with other students.
4. I think I will be able to use what I learn in this course in other courses.
5. I believe I will receive an excellent grade in this class.
6. I'm certain I can understand the most difficult material presented in the readings for this course.
7. Getting a good grade in this class is the most satisfying thing for me right now.
8. When I take a test I think about items on other parts of the test I can't answer.

9. It is my own fault if I don't learn the material in this course.

10. It is important for me to learn the course material in this class.

11. The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.

12. I'm confident I can learn the basic concepts taught in this course.

13. If I can, I want to get better grades in this class than most of the other students.

14. When I take tests I think of the consequences of failing.

15. I'm confident I can understand the most complex material presented by the instructor in this course.

16. In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.

17. I am very interested in the content area of this course.

18. If I try hard enough, then I will understand the course material.

19. I have an uneasy, upset feeling when I take an exam.

20. I'm confident I can do an excellent job on the assignments and tests in this course.

21. I expect to do well in this class.

22. The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.

23. I think the course material in this class is useful for me to learn.

24. When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.

25. If I don't understand the course material, it is because I didn't try hard enough.

26. I like the subject matter of this course.

27. Understanding the subject matter of this course is very important to me.

28. I feel my heart beating fast when I take an exam.

29. I'm certain I can master the skills being taught in this class.

30. I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.

31. Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.

Part B: Learning Strategies

32. When I study the readings for this course, I outline the material to help me organize my thoughts.

33. During class time I often miss important points because I'm thinking of other things. (REVERSED)

34. When studying for this course, I often try to explain the material to a classmate or friend.

35. I usually study in a place where I can concentrate on my course work.

36. When reading for this course, I make up questions to help focus my reading.

37. I often feel so lazy or bored when I study for this class that I quit before I finish what I planned to do. (REVERSED)

38. I often find myself questioning things I hear or read in this course to decide if I find them convincing.

39. When I study for this class, I practice saying the material to myself over and over.

40. Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone. (REVERSED)

41. When I become confused about something I'm reading for this class, I go back and try to figure it out.

42. When I study for this course, I go through the readings and my class notes and try to find the most important ideas.

43. I make good use of my study time for this course.

44. If course readings are difficult to understand, I change the way I read the material.

45. I try to work with other students from this class to complete the course assignments.

46. When studying for this course, I read my class notes and the course readings over and over again.

47. When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.

48. I work hard to do well in this class even if I don't like what we are doing.

49. I make simple charts, diagrams, or tables to help me organize course material.

50. When studying for this course, I often set aside time to discuss course material with a group of students from the class.

51. I treat the course material as a starting point and try to develop my own ideas about it.

52. I find it hard to stick to a study schedule. (REVERSED)

53. When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions.

54. Before I study new course material thoroughly, I often skim it to see how it is organized.

55. I ask myself questions to make sure I understand the material I have been studying in this class.

56. I try to change the way I study in order to fit the course requirements and the instructor's teaching style.

57. I often find that I have been reading for this class but don't know what it was all about. (REVERSED)

58. I ask the instructor to clarify concepts I don't understand well.

59. I memorize key words to remind me of important concepts in this class.

60. When course work is difficult, I either give up or only study the easy parts. (REVERSED)
61. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.
62. I try to relate ideas in this subject to those in other courses whenever possible.
63. When I study for this course, I go over my class notes and make an outline of important concepts.
64. When reading for this class, I try to relate the material to what I already know.
65. I have a regular place set aside for studying.
66. I try to play around with ideas of my own related to what I am learning in this course.
67. When I study for this course, I write brief summaries of the main ideas from the readings and my class notes.
68. When I can't understand the material in this course, I ask another student in this class for help.
69. I try to understand the material in this class by making connections between the readings and the concepts from the lectures.
70. I make sure that I keep up with the weekly readings and assignments for this course.
71. Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.
72. I make lists of important items for this course and memorize the lists.
73. I attend this class regularly.
74. Even when course materials are dull and uninteresting, I manage to keep working until I finish.
75. I try to identify students in this class whom I can ask for help if necessary.
76. When studying for this course I try to determine which concepts I don't understand well.
77. I often find that I don't spend very much time on this course because of other activities. (REVERSED)
78. When I study for this class, I set goals for myself in order to direct my activities in each study period.
79. If I get confused taking notes in class, I make sure I sort it out afterwards.
80. I rarely find time to review my notes or readings before an exam. (REVERSED)
81. I try to apply ideas from course readings in other class activities such as lecture and discussion.