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Review of the Motivated Strategies for Learning Questionnaire

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December 15, 2005

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The purpose of this report is to provide a detailed overview of the development and initial validation of the Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ is an 81-item, self-report instrument designed to measure college students' motivational orientations and their use of various learning strategies (Pintrich, Smith, Garcia, & McKeachie, 1991). This report reviews the history of the MSLQ, the nature of the instrument, its intended purpose, the population for whom it was developed, scoring procedures, and the ways in which the scores can and have been used. Additionally, this review includes a detailed commentary on the adequacy of the instrument development procedures, including reliability and validity evidence gathered. Furthermore, this report provides an abbreviated reference list of empirical studies that employed the instrument and describes, in detail, how the instrument was used in two different investigations. Finally, the report ends with an overall qualitative assessment of the MSLQ.

History of the MSLQ

Prior to the MSLQ, much of the research on college student learning focused on individual differences in learning styles—constructs that were weakly correlated to students' study behavior and course achievement. Additionally, many of the study skills inventories were criticized for having no theoretical basis. Thus, in the early 1980s, Bill McKeachie and Paul Pintrich, both professors at the University of Michigan, began developing a tool for assessing students' motivation and learning strategies. Ultimately, the researchers were interested in helping students improve their ability to learn (Duncan & McKeachie, 2005).

Early versions of the MSLQ were used to evaluate the effectiveness of a *Learning to Learn* course for college undergraduates. In 1986, however, McKeachie and Pintrich began formal development of the MSLQ after receiving a 5-year grant from the Office of Educational Research and Improvement. The final version of the MSLQ underwent 10 years of development,

during which time the instrument was used in numerous correlational field studies. During its early development, McKeachie and Pintrich used the instrument to conceptualize and empirically validate a general model of college student motivation and self-regulated learning, a model which is still used today by many educational psychologists (Duncan & McKeachie, 2005).

Detailed Description of the Instrument

Theoretical Framework

The MSLQ was developed using a social cognitive view of motivation and self-regulated learning (see, for example, Pintrich, 2003). In this model, a students' motivation is directly linked to their ability to self-regulate their learning activities; where self-regulated learning is defined as being metacognitively, motivationally, and behaviorally active in one's own learning processes and in achieving one's own goals (Eccles & Wigfield, 2002. This framework assumes that motivation and learning strategies are not static 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" (Duncan & McKeachie, 2005, p. 117). Stated another way, students' motivations change from course to course (e.g., depending on their interest in the course, efficacy for performing in the course, etc.), and their learning strategies may vary as well, depending on the nature of the course.

Using this theoretical framework, the MSLQ was designed to measure college undergraduates' motivation and self-regulated learning as they relate to a specific course. That is, the course is seen as the unit of measure, with the idea that the course is ideally situated between the very general level of "all learning situations" (Duncan & McKeachie, 2005, p. 118) and the very specific and unworkable level of "every specific situation within one course" (Duncan & McKeachie, 2005, p. 118). Additionally, the MSLQ is distinctly different from another widely-used self-assessment, the Learning and Study Strategies Inventory (LASSI; Weinstein, Schulte,

& Palmer, 1987), which assesses students' learning strategies and attitudes toward learning *in general*.

Instrument Components

The MSLQ consists of 81, self-report items divided into two broad categories: (1) a *motivation* section and (2) a *learning strategies* section. According to the MSLQ Manual:

> The motivation section consists of 31 items that assess students' goals and value beliefs for a course, their beliefs about their skill to succeed in a course, and their anxiety about tests in a course. The learning strategy section includes 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. (Pintrich et al., 1991, p. 5)

Altogether, the MSLQ consists of 15 subscales: six within the motivation section and nine within the learning strategies section (see Appendix A for a complete list of MSLQ items). The instrument is completely modular, allowing a researcher, instructor, or student to use the scales together or individually, depending on their specific needs. Table 1 provides a list the 15 subscales that make up the MSLQ.

Scoring the Instrument

Students rate themselves on a 7-point Likert scale, from 1 (*not at all true of me*) to 7 (*very true of me*). Scores for the individual subscales are computed by taking the mean of the items within that subscale. For example, the test anxiety subscale is composed of five items. A student's score would be calculated by summing these five items and computing the mean.

Table 1

Components of the MSLQ

Part 1: Motivation Scales		Part 2: Learning Strategies Scales	
Scale	# of Items	Scale	# of Items
1. Intrinsic Goal Orientation	4	1. Rehearsal	4
2. Extrinsic Goal Orientation	4	2. Elaboration	6
3. Task Value	6	3. Organization	4
4. Control of Learning Beliefs	4	4. Critical Thinking	5
5. Self-Efficacy for Learning & Performance	8	5. Metacognitive Self-Regulation	12
6. Test Anxiety	5	6. Time/Study Environmental Management	8
		7. Effort Regulation	4
		8. Peer Learning	3
		9. Help Seeking	4
Total Number of Items	31	Total Number of Items	50

Some items within the MSLQ are negatively worded and must be reversed before a student's score is computed. If, for example, as student circled a 1 on a negatively worded question, this item would be reverse scored and would become a 7. The simplest way to compute a reverse-coded item is to take the original score and subtract it from 8 (Pintrich et al., 1991). Ultimately, the overall score for a given subscale represents the positive wording of all items within that scale and so higher scores indicate greater levels of the construct being measured (Duncan & McKeachie, 2005).

Instrument and Score Use

The MSLQ was designed to be used by researchers as a measurement instrument to investigate the nature of student motivation and learning strategies use, and by instructors and students as a means of assessing students' motivation and study skills within a given course. The instrument is usually given in class and takes approximately 20-30 minutes to complete. There are no norms developed for the instrument, although local norms can be generated for individual classes, instructors, or institutions if desired for comparative purposes (Duncan & McKeachie, 2005). Having no population-wide norms is in keeping with the MSLQ's theoretical framework. Namely, the 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" (Duncan & McKeachie, 2005, p. 119).

Scores from the MSLQ have been used extensively for empirical research in the areas of motivation and self-regulated learning. Specifically, scores have been used to (a) address the nature of motivation and its affect on learning strategies use; (b) refine the theoretical understanding of between- and within-domain specificity of motivational constructs; and (c) evaluate the motivational and cognitive effects of instructional interventions, including different course structures and various educational technologies (e.g., online learning and computer-based instruction; Duncan & McKeachie, 2005). For instructors teaching a course, or students taking a course, scores from the MSLQ can be used to assess students' motivation and self-regulated learning skills. Using the results, instructors can identify students who may be having trouble and provide additional study skills assistance. With the advent of the Internet, many instructors, as well as many advising and counseling centers, have started using online versions of the MSLQ as a form of needs assessment (Duncan & McKeachie, 2005).

Instrument Development Procedures: Reliability and Validity

Following their grant by the Office of Educational Research and Improvement in 1986, McKeachie and Pintrich began formal development of the MSLQ. Draft versions of the instrument were used at three collaborating colleges in the Midwest, and three data collection periods were completed with students from these institutions. These collection periods occurred in 1986, 1987, and 1988, and data were collected on 326, 687, and 758 students, respectively. These draft versions of the MSLQ were subjected to "the usual statistical and psychometric analyses, including internal reliability coefficient computation, factor analyses, and correlations with academic performance and aptitude measures" (Pintrich et al., 1991, p.6). After each wave of data collection and analysis, items were rewritten and the conceptual model underlying the instruments was refined. The final version of the MSLQ was completed in 1990 and presented formally for the first time in the journal *Educational and Psychological Measurement* (Pintrich, Smith, Garcia, & McKeachie, 1993). The data presented in that article included results gathered from a sample of 380 students at a public, 4-year university in the Midwest. "Thirty-seven classrooms were sampled, spanning 14 subject domains and five disciplines, including natural science, humanities, social science, computer science, and foreign language" (Pintrich et al., 1991, p. 6).

Instrument Reliability and Validity

Using data from their sample (N = 380), the authors of the MSLQ completed a number of statistical tests to determine the reliability and validity of their instrument. First, the authors completed two confirmatory factor analyses to determine "the utility of the theoretical model and the operationalization of the MSLQ scales" (Pintrich et al., 1993, p. 805). One confirmatory factor analysis was completed for the set of motivational items and another for the set of learning strategies items. Unlike exploratory factor analysis, confirmatory factor analysis requires the

identification of which items (indicators) should fall onto which factors (latent variables). This confirmatory factor analysis allowed the authors to quantitatively test their theoretical model (Pintrich et al., 1993). While a complete presentation and discussion of the factor analysis results is beyond the scope of this report, results indicated that the MSLQ showed reasonable factor validity (for complete results see Pintrich et al., 1993).

Following the factor analyses, the authors calculated internal consistency estimates of reliability (Cronbach's alpha) and "zero-order correlations between the different motivational and cognitive scales" (Pintrich et al., 1993, p. 806). The majority of the Cronbach's alphas for the individual subscales (9 out of 15) were fairly robust (i.e., they were greater than .70, with the largest one, self-efficacy for learning and performance, being .93). The Cronbach's alphas for the remainder of the subscales fell below .70 (with the lowest one, help seeking, coming in at .52). Appendix B includes a complete list of each subscale's alpha. Overall, these results suggested the MSLQ had relatively good internal reliability (Gable & Wolfe, 1993).

As for the zero-order correlations between the different scales, they too were fairly robust and suggested that the scales were valid measures of the motivational and cognitive constructs (Pintrich et al., 1993). Appendix C includes the complete inventory of the correlations between the MSLQ scales.

To determine predictive validity, the MSLQ subscales were correlated with students' final course grades. These correlations are presented in Appendix D. As described by the authors, "the scale correlations with final grade are significant, albeit moderate, demonstrating predictive validity" (Pintrich et al., 1991, p. 7). Additionally, all correlations were in the expected direction, further adding to the validity of the scales. Taken together, the subscales seemed to show sound predictive validity. Furthermore, given the many other factors that effect course grades and which are not measured by the MSLQ, as well as the fact that course grades as

a whole are not very reliable measures of learning and performance, these significant yet modest correlations seemed reasonable (Pintrich et al, 1993).

Research Studies Employing the MSLQ

Since its inception, the MSLQ has been used extensively by hundreds of researchers and countless instructors. Moreover, the MSLQ has been translated into more than 20 different languages and has undergone formal assessment of validity and reliability in two other languages: Spanish and Chinese (Duncan & McKeachie, 2005). In the last five years alone, the MSLQ, either in part of in its entirety, has been used in more than 50 different research studies. Appendix E contains an abbreviated list of 10 of these studies (for a more complete listing, see Duncan and McKeachie, 2005), and the following section describes how the MSLQ has been used in two of these studies.

Motivation and Self-Regulated Learning in Seventh Graders

Pintrich and De Groot (1990) performed one of the first empirical studies using the MSLQ. In fact, at the time of their study, evaluation of the MSLQ was just being completed, and thus the version they used was slightly shorter than the final instrument.

The purpose of their correlational study was to examine the relationships between aspects of motivation, self-regulated learning, and classroom academic performance for 173 seventh graders. The researchers administered a shortened version of the MSLQ that consisted of five subscales, including: task value, self-efficacy, test anxiety, self-regulation, and cognitive strategy use. Their first research question concerned the relationships between these variables, and their results were as expected. Specifically, higher levels of self-efficacy (r = .33) and task value (r = .63) were correlated with higher levels of cognitive strategy use. Additionally, higher levels of self-efficacy (r = .44) and task value (r = .73) were correlated with higher levels of self-

regulation. Test anxiety was not associated with either cognitive strategy or self-regulation (Pintrich & De Groot, 1990).

Their second research question concerned how these same variables related to student performance, as measured by final course grades, exams and quizzes, essays and reports, and seatwork. In general, higher levels of intrinsic value and self-efficacy were associated with higher levels of student achievement across all performance variables, while test anxiety was negatively correlated with grades on all performance measures except seatwork. Finally, higher levels of cognitive strategy use and self-regulation were correlated with higher levels of achievement on all performance measures (Pintrich & De Groot, 1990).

Ultimately, results from their study provided "an empirical base for the specification and elaboration of the theoretical linkages between individual differences in students' motivational orientations and their cognitive engagement and self-regulation in a classroom setting" (Pintrich & De Groot, 1990, p. 37). Additionally, their study laid the groundwork for future use of the MSLQ in research on motivation and self-regulation.

Self-Regulation and Instructional Control in Computer-Based Learning

Eom and Reiser (2000) examined the effects of learners' use of self-regulated learning strategies on achievement and motivation of 37 sixth and seventh graders taking a computer-based course. Essentially, the authors were trying to determine how varying the amount of learner control within the computer-based course might effect the achievement and motivation of students who rated themselves as either high or low self-regulating learners. To answer this overriding question, the authors developed a Self-Regulatory Skills Measurement Questionnaire (SRSMQ), which was an adaptation of the learning strategies component of the MSLQ and another self-regulated learning questionnaire.

Results from their study revealed that, regardless of how students rated their self-regulating learning skills, learners in the program-controlled condition (i.e., learners who had very little control over their progression through the course) "scored significantly higher on a posttest than did learners in the learner-controlled condition" (Eom & Reiser, 2000, p. 247). Additionally, the researchers found that poorer performance in the learner-controlled condition was particularly evident in the students who rated themselves as low self-regulating learners.

According to Eom and Reiser (2000), the most significant result of their study was the fact that students who rated themselves as low self-regulating learners scored much better on the posttest (approximately 76.4% better) when taking the program-controlled condition as compared to the learner-controlled condition. This result supports the conclusion that students with low self-regulating skills are not as able to learn from computer-based courses that provide high quantities of learner-control, a conclusion that is supported by other research in the area of computer-based instruction (Eom & Reiser, 2000).

Overall Qualitative Evaluation of the MSLQ

Overall the MSLQ appears to be a very sound instrument. The simple fact that it has been used by hundreds of researchers in numerous countries around the world is a testament to its reliability and validity. Additionally, the MSLQ appears to be a very useful, flexible tool that can be adapted for many purposes by researchers, instructors, and students alike. The one major flaw seems to be the relatively low internal reliability values of some of the MSLQ's subscales (see recommendations in Gable & Wolfe, 1993). These low values are due, in part, to the small number of items that make up each subscale (i.e., each of the three subscales with the lowest values [.52, .62, and .64] are composed of only four items). Additionally, some of the constructs measured by the MSLQ are notoriously difficult to assess (e.g., goal orientation). However, because the MSLQ measures so many different constructs, it is necessary to keep the subscales

as short as possible. As it currently stands, the entire instrument is composed of 81 items and takes almost 30 minutes to complete. Therefore, it is possible that the authors did a cost-benefit analysis and decided to trade low internal reliability, in some cases, for the ability to measure more constructs.

Like any self-report instrument, the MSLQ has its limitations, and the authors are quick to remind all users to exercise caution when making conclusions based on the results of their tool. The major concerns with all self-report instruments revolve around questions of reliability and validity. With regards to reliability, the authors note, “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” (Duncan & McKeachie, 2005, p. 124). In terms of validity, social desirability bias is considered a significant threat to the construct validity of all self-report instruments. That being said, however, the authors of the MSLQ have found that measures of response bias did not account for any significant amount of variance and did not change their final results. On the other hand, the authors also acknowledge that “actual observations or behavioral indicators of strategy use provide better construct validity than does a self-report questionnaire such as the MSLQ” (Duncan & McKeachie, 2005, p. 124). Accepting the measurement limitations of the MSLQ, the instrument *does* appear to be a practical means of assessing students’ motivation and use of self-regulated learning strategies in the classroom.

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Appendix A

MSLQ Item List

The following is a list of items that make up the MSLQ (from Pintrich et al., 1991).

Part A. Motivation

The following questions ask about your motivation for and attitudes about this class. Remember there are no right or wrong answers, just answer as accurately as possible. Use the scale below to answer the questions. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you.

1	2	3	4	5	6	7
Not at all true of me						*Very true of me*

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

The following questions ask about your learning strategies and study skills for this class. Again, there are no right or wrong answers. Answer the questions about how you study in this class as accurately as possible. Use the same scale to answer the remaining questions. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you.

1	2	3	4	5	6	7
Not at all true of me						*Very true of me*

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. (reverse coded)
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. (reverse coded)

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. (reverse coded)
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. (reverse coded)
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. (reverse coded)
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. (reverse coded)
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. (reverse coded)
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. (reverse coded)
81. I try to apply ideas from course readings in other class activities such as lecture and discussion.

Appendix B

Table B1

Items within the 15 MSLQ Subscales and the Subscales' Corresponding Coefficient Alphas (modified from Duncan & McKeachie, 2005)

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

Note. Items marked with an "r" are reverse coded.

Appendix C

Correlations between MSLQ Subscales

Table C1

Zero-order Correlations between the Different Motivational and Cognitive Subscales (modified from Pintrich et al., 1991)

	Intr	Extr	Tskv	Cont	Slfef	Tanx	Reh	Elab	Org	Crit	Mcg	Tsdy	Eff	Prlrn
Extr	0.15													
Tskv	0.68	0.18												
Cont	0.29	0.14	0.30											
Slfef	0.59	0.15	0.51	0.44										
Tanx	-0.15	0.23	-0.14	-0.10	-0.37									
Reh	0.10	0.23	0.12	0.02	0.10	0.11								
Elab	0.48	0.13	0.44	0.22	0.35	-0.13	0.36							
Org	0.27	0.09	0.19	0.02	0.21	-0.05	0.49	0.52						
Crit	0.58	0.06	0.39	0.18	0.42	-0.11	0.15	0.57	0.31					
Mcg	0.50	0.07	0.45	0.17	0.46	-0.24	0.39	0.67	0.55	0.53				
Tsdy	0.32	0.13	0.37	0.00	0.32	-0.17	0.38	0.44	0.44	0.25	0.58			
Eff	0.43	0.11	0.47	0.07	0.44	-0.21	0.26	0.44	0.36	0.25	0.61	0.70		
Prlrn	0.13	0.20	0.09	-0.03	0.05	0.10	0.21	0.19	0.23	0.25	0.15	0.10	0.05	
Hsk	0.10	0.08	0.16	0.00	0.08	0.08	0.18	0.28	0.22	0.19	0.25	0.21	0.18	0.55

Note. Intr: Intrinsic Goal Orientation
Extr: Extrinsic Goal Orientation
Tskv: Task Value
Cont: Control Beliefs about Learning
Slfef: Self-Efficacy for Learning and Performance
Tanx: Test Anxiety
Reh: Rehearsal
Elab: Elaboration
Org: Organization
Crit: Critical Thinking
Mcg: Metacognitive Self-Regulation
Tsdy: Time and Study Environment
Eff: Effort Regulation
Prlrn: Peer Learning
Hsk: Help Seeking

Appendix D

Descriptive Statistics and Scale Correlations

Table D1

Descriptive Statistics and Subscale Correlations with Final Course Grades (modified from Pintrich et al., 1993)

Scale	*M* (*SD*)	*r* with Final Course Grade
Motivation Subscales		
1. Intrinsic Goal Orientation	5.03 (1.09)	.25
2. Extrinsic Goal Orientation	5.03 (1.23)	.02
3. Task Value	5.54 (1.25)	.22
4. Control of Learning Beliefs	5.74 (.98)	.13
5. Self-Efficacy for Learning & Performance	5.47 (1.14)	.41
6. Test Anxiety	3.63 (.80)	-.27
Learning Strategies Subscales		
1. Rehearsal	4.53 (1.35)	.05
2. Elaboration	4.91 (1.08)	.22
3. Organization	4.14 (1.33)	.17
4. Critical Thinking	4.16 (1.28)	.15
5. Metacognitive Self-Regulation	4.54 (.90)	.30
6. Time/Study Environmental Management	4.87 (1.05)	.28
7. Effort Regulation	5.25 (1.10)	.32
8. Peer Learning	2.89 (1.53)	-.06
9. Help Seeking	3.84 (1.23)	.02

Appendix E

Empirical Studies Using the MSLQ

The following is an abbreviated listing of 10 empirical studies that used the MSLQ, or portions thereof:

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*, 23-24.

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.

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.

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

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, 61*(10-A), 3294.

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

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

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,* 236-250.