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Research Report Series

Measuring the Motivation and Strategy Use of GED Students in Distance Education Programs

September, 2005

Project IDEAL Support Center • Institute for Social Research • University of Michigan



Project IDEAL is a consortium of states working together to develop effective distance education programs for adult learners. The Project IDEAL Support Center at the University of Michigan provides technical support in the areas of teacher training, research design, data collection, data analysis and reporting. The Center produces working papers and technical reports on topics of importance to distance education. Through collaborative research and practice, the consortium is working to provide quality distance education for adult learners across the country.

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Christopher Wolters
University of Houston

Stuart Karabenick
Math and Science Partnership – Motivational Assessment Program
University of Michigan

Jerome Johnston and Shannon Young
Institute for Social Research
University of Michigan

Project IDEAL Support Center
Institute for Social Research • University of Michigan
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Abstract

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This report summarizes a pilot study done to evaluate the methodology and psychometric properties of an on-line instrument. Ninety-four adults working on their GED in distance education programs completed a survey that measured their motivational beliefs, strategy use, and self-regulation with regard to the distance education course they were taking. Analyses focus on evaluating the reliability and validity of individual scales from the instrument. Findings suggest that future research in this area could be informative with a more elaborate research design, and more representative sample, and with adjustments to some of the items to enhance their psychometric properties.

With regard to substantive conclusion, findings in this non-representative sample indicate that participants pursuing their GED in these programs were highly motivated. They consider their GED preparation program valuable in terms of its utility and importance to them as persons, and consider themselves efficacious, while indicating that being in the program required a moderate level of sacrifice. Quite important for program evaluation is the fact that virtually all the students reported being strongly supported by their instructors. They would recommend the program to others and have little regret about having chosen to work on obtaining their GED. The direct association between motivation and various dimensions of self-regulated learning are consistent with evidence obtained in many other populations, despite the relatively restricted range of levels of motivation in the present sample.

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As with classroom programs, there is variation among distance learners in engagement of learning tasks and persistence in classes. Some of the variation can be explained by situational factors, such as time available to study or access to the Internet. Some can be explained by individual differences in prior knowledge or academic ability. And some can be explained by the study skills they bring to the situation and the motivation they have for the academic tasks they are asked to complete. Prior research with younger students in more traditional settings has shown that these last two factors can be useful for both understanding learning and for designing interventions that help to improve achievement. The larger goal of this collaboration was to establish a research effort that would extend this research to populations of adult learners in a distance education setting. Under more ideal conditions, this research would entail a short longitudinal study in which data on students' motivational beliefs is gathered early in a academic year and with data on students' study skills and performance collected at one or two subsequent time points. Prior to this more ambitious project, however, it was necessary to conduct a preliminary investigation into the viability of the design, method, and instrumentation that would need to be used. For this pilot study, 92 adult learners completed a survey and their teachers provided data on course performance in May of 2005. This report outlines the theoretical background serving as the foundation for this investigation, the procedures and measures used to gather data, the results of this initial study, and finally the value and implications of findings for future research in this area.

Theoretical Background—Self-Regulated Learning

Self-regulated learning was used as the theoretical basis for this investigation of adult learners' engagement, behavior, and performance within courses offered through distance education. Many related models of self-regulated learning have been used in K-16 research to understand students' behavior and performance in academic settings (Boekaerts, Pintrich, & Ziedner, 2000). Drawing from these models, the two dimensions of self-regulated learning investigated in this study were motivation and the use of cognitive and regulatory strategies. A short description of these dimensions including the specific constructs used in the present study is provided below.

Motivation

The motivational beliefs included in the study all derive from social cognitive models of motivation including achievement goal theory, self-efficacy theory, and expectancy-value theory. At present, achievement goal theory reflects one leading perspective used to understand and explain students' motivation within academic settings (Linnenbrink & Pintrich, 2000; Urdan, 1997). This model focuses on the types of purposes, reasons or goals that students adopt when they become engaged in academic tasks. The particular types of goals students adopt are thought to guide their engagement, behavior, and ultimately their level of performance. Recent work in this area has highlighted the importance of three different goal orientations. Mastery orientation describes students who become engaged in tasks with the intent to learn as much as possible, to improve their abilities, or to increase their understanding. Students who adopt this goal define

success as learning new material and overcoming any challenges in order to do the best they can. Students with an approach performance goal orientation are characterized by wanting to demonstrate their ability relative to others, to outperform their peers, or to be publicly evaluated as high in ability. Students with these goals define success as getting extrinsic rewards or being publicly evaluated as high in ability. Students with an avoidance performance goal orientation are also concerned primarily with how others judge their ability. Rather than focus on doing better than others, however, students with this orientation focus on avoiding the appearance of incompetence, low ability, or being judged as less capable than their peers. Although theoretically important, the performance orientations were deemed less relevant for a learning context in which students had minimal interactions with peers engaged in the same learning activities. Hence, only mastery orientation was included in this initial exploratory study.

A second view of motivation used in this study was self-efficacy theory (Bandura, 1997; Zimmerman, 2000). Self-efficacy describes individuals' beliefs or perceptions about their ability to complete successfully a particular task or type of task. For example, students with high levels of self-efficacy feel more confident or more assured of their ability to overcome any possible obstacles and to understand and learn the material necessary to do well in the course. Self-efficacy can be viewed as highly task or domain specific. A student who feels confident in one domain (e.g., math) may not feel confident in another domain (e.g., social studies). A student who feels capable of success at one type of task (e.g., writing papers) may not feel efficacious about other types of tasks (e.g., taking multiple choice tests)—even within the same course. In the present study, students' general self-efficacy for learning the material or content associated with passing the GED test was assessed.

A third view of motivation used in this study emphasizes the different types of value that students might have for what they are asked to learn (Wigfield & Eccles, 2000). Three types of value were included in this study. Utility reflects individuals' beliefs that what they are learning is useful or will allow them to reach important future goals. For instance, material might have high utility value because it is considered necessary to pass the GED examination. Importance reflects students' beliefs that material is valuable because it is central to how they view themselves or who they are at the moment. A final dimension of value emphasized in this theory is cost. This dimension represents the expenses, sacrifices, or opportunities one must give up in order to complete academic tasks. For instance, when academic activities take away valuable time with friends and family they have a greater cost and are less likely to be pursued.

Use of Learning Strategies

The learning strategies included in this study come from a generalized social cognitive view of self-regulated learning. As a whole, this view of self-regulated learning posits that students' achievement and performance within a particular course is in large part a function of students' ability to manage their learning with regard to the overlapping areas of cognition, motivation, and behavior. Aspects of students' self-regulation in each of these areas were assessed.

With regard to cognitive strategies, students' reported on their use of rehearsal, elaboration, and organization strategies. This type of strategy represents students' tendency to engage in particular cognitive activities that contribute to learning. In addition, students' tendency to manage the way in which they engage with the material was assessed using metacognitive strategies related to planning, monitoring and self-regulation. In terms of their behavioral self-regulation, students use of help seeking and time management strategies were measured. Help-seeking reflected students' tendency to draw on the individuals in their environment for assistance when it is appropriate and will benefit their learning. Time management reflected individuals' ability to manage their own schedules and commitments associated with the course in a way that will maximize their learning. Finally, Procrastination was also assessed as a way of tapping into the failure of students' to self-regulate the motivational and behavioral aspects of their learning.

Performance, Engagement and Affective Attitudes

Students' engagement, performance and experiences in their distance education course were assessed in several ways.

Seat Time—Amount of Invested Effort. In distance education, seat time is a proxy for work completed. Depending on the distance curriculum being studied, seat time (in hours) is calculated in one of two ways. Some curricula keep track of the clock time a person spends completing assignments on the computer. For these students clock time corresponds to total invested effort. Other curricula do not have a way to monitor time spent working on assignments. For these curricula teachers examine completed assignments and award seat time by a formula based on average time required to complete an assignment. (For a detailed description of how seat time is calculated, see Johnston, 2005.)

Lessons Completed. All distance curricula used for GED preparation are divided into units or chapters. Lessons completed is the total number of lessons completed by the student.

Seat Time per Lesson—Efficiency. Dividing seat time by the number of lessons completed yields a measure of learner efficiency at completing the work.

Weeks in Program. A common problem in adult education in general, and distance education in particular, is persistence. Weeks in Program is a measure of how long the student stayed in the program. It has some weaknesses. It does not take into account that a student could finish preparation for taking the GED test prior to the end of the semester.

Attitudes about Choice and Instructor Support: In addition to the more objective information on students' academic performance and engagement, self-report data were collected with regard to areas related to students' attitudes and experiences. Five individual items were used to indicate different attitudes students' had regarding their pursuit of a GED or other forms of continuing education. Generally, these items reflect whether students viewed the process as worthwhile and whether they were apt to continue to pursue other educational opportunities in the future. Finally, students were

questioned about the level of instructor support that they perceived within their distance education course. This scale provided some insight into whether students felt as if the instructor within their distance learning environment provided them with the support necessary for learning.

Research Questions

The present study was designed as an initial step in the process of investigating whether motivational and regulatory aspects of self-regulated learning could be used to understand adult students' learning and achievement within a distance education context. As the first step in this larger process, the present study was conducted to examine the psychometric properties, especially the reliability and validity, of several key scales or variables. This phase was necessary because items from the scales described above have not been used with adult education populations or with students learning via distance education methods. Hence, items that were newly created or revised in order to better fit the academic context of adult learners, GED preparation, and distance education had to be tested. In addition, the instrument was administered as an online survey, and this method was relatively untested. Together these issues indicate that it was necessary to analyze each item and each scale with regard to its psychometric properties. These analyses include the mean and frequency distribution for each item, the coefficient alphas of each scale, and the correlations among different scales. Together these analyses provide evidence regarding the reliability and validity of each scale.

Method

Participants. Participants were recruited from the pool of adults taking distance education courses in states that belong to the Project IDEAL consortium (<http://projectideal.org>). Ninety-four students volunteered to complete the survey. They were paid \$20 for their participation. The average age was 30, with a range of 17-67. Most identified themselves as Caucasian (72%); while 16% said Asian and 11% Hispanic. Most were female (71%). Half were employed (51%), 22% were unemployed, and 28% were not in the labor force.

Design. To address the goals of this pilot study a very simple design was adopted. Students were recruited throughout their involvement in the GED studies and completed the survey at a single time point when it was convenient. After students had completed this portion of the study, their performance data were collected from instructors and from course records. Future studies that are directed at more complex goals would need to utilize multiple waves of data collected at more specific times during students' educational experience.

Procedures. From the participant's point of view, the basic design of the study was fairly straightforward. Students were asked to complete an instrument that included an informed consent question, questions assessing various demographic or background characteristics and a self-report survey of motivational beliefs and use of learning and regulatory strategies. The latter portions of this instrument consisted of 63 Likert-styled items (e.g., 1 = *strongly disagree* to 5 = *strongly agree*) that were designed to take approximately 30 minutes to complete. Students were informed about the study and their

participation was requested by their course instructor. Students who decided to participate visited a secure website where they were provided more information on the study and completed the on-line survey.

Measures. The primary research tool for this study was a single self-report survey that participants completed on-line. The final survey was presented in five sections with the first and final portions intended to obtain demographic information regarding the student, the particular GED program they were completing, and information necessary if they wanted to obtain the incentive available for participation. The second section contained the items tapping into participants' motivational beliefs. The third and fourth sections contained the items used to assess students' use of learning strategies and regulatory behaviors. Tables 1A-1D show the items in the sequence seen by participants. The codebook in the appendix organizes the items by the scales they were designed to assess.

Analyses and Results

In order to address the psychometric goals of this study, data were analyzed in three ways. First, results for individual items were examined with regard to the item mean and frequencies for each point on the response scale. Second, reliability and descriptive analyses were computed for the scales representing students' motivational beliefs, use of cognitive and metacognitive strategies, self-regulation, and perceptions of teacher support (context). These scales were constructed using the predetermined sets of three to eight items (see codebook of survey items) and were computed by averaging student responses (i.e., 1 to 5) with appropriate reversals for negatively worded items. Third, bivariate correlations were computed to evaluate relations among the self-report scales and between these scales and the indicators of students' performance and affective experiences.

Item Frequencies and Means

Information on the frequency of responses for each item are presented in Table 1. The final column in this table also presents the overall average for each of the self-report items. These results indicate that many of the motivational items (#1 to #23) suffered from a negative skew with most participants selecting a response of 3, 4, or 5. For many of these items, none of the participants selected 1 or 2 as a response. Means for the individual items also reflected this tendency for participants to endorse most of the positive motivational statements. In fact, of the 23 items in this section 17 had means above 4.0.

This tendency to rely on the upper portions of the response scale was less pronounced for the individual items related to students' strategy use (Table 1B), self-regulation and instructor support (Table 1C). Again, few participants indicated that they strongly disagreed with the statement. For example, for only 1 of the 18 items tapping into students' study strategies did more than two participants strongly disagree with the statement. At the same time, however, students were not as likely to strongly agree with the statements as they did for the motivational items. Only 6 of the 18 strategy use items, and only 7 of the 22 regulatory and instructor support items had individual means greater than 4.0. Hence for these items, students tended to indicate a less polarized level of

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endorsement. This shift in the frequency of responses for individual items suggests that the pattern for the motivational items was not simply a bias toward using the upper end of the response scale.

Table 1A. Frequencies and Means for Motivation Items

	Response Distribution					Response Average
	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree	
1. I will have to give up a lot to do well in my GED studies.	9% (8)	36% (32)	21% (19)	29% (26)	6% (5)	2.87
2. Having my GED will help me get a better job.	0% (0)	1% (1)	8% (7)	23% (21)	68% (61)	4.58
3. What I learn while getting my GED will make me a better person.	0% (0)	9% (8)	11% (10)	38% (34)	42% (38)	4.13
4. Having my GED will be useful for me later in life.	0% (0)	0% (0)	6% (5)	30% (27)	64% (58)	4.59
5. One of my goals for each lesson is to learn as much as I can.	0% (0)	0% (0)	4% (4)	39% (35)	57% (51)	4.52
6. I can do almost all the work to earn my GED if I don't give up.	0% (0)	3% (3)	3% (3)	39% (35)	54% (49)	4.44
7. I will need to give up other activities I enjoy to study for my GED.	8% (7)	27% (24)	26% (23)	30% (27)	9% (8)	3.06
8. I won't do any more work for my GED unless I have to.	38% (34)	47% (42)	13% (12)	0% (0)	1% (1)	1.79
9. It's important to me that I really understand the material I am learning for my GED.	0% (0)	1% (1)	0% (0)	31% (28)	68% (61)	4.66
10. Having a GED will make me feel better about who I am.	0% (0)	1% (1)	6% (5)	27% (24)	67% (60)	4.59
11. What I learn while studying for my GED is valuable because it will help me in the future.	0% (0)	1% (1)	3% (3)	31% (28)	64% (58)	4.59
12. One of my goals for each lesson is to master a lot of new skills or information.	1% (1)	2% (2)	8% (7)	40% (36)	49% (44)	4.33
					Total Respondents	90

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Motivation Items (continued)

	Response Distribution					Response Average
	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree	
13. Some of the information I learn while getting my GED will help me in my daily life.	0% (0)	2% (2)	11% (10)	49% (44)	38% (34)	4.22
14. I will need to invest a lot of my time to earn my GED.	2% (2)	11% (10)	29% (26)	39% (35)	19% (17)	3.61
15. I'm certain I can figure out how to do the most difficult work to earn my GED.	0% (0)	1% (1)	16% (14)	59% (53)	24% (22)	4.07
16. The skills I learn as part of getting my GED will be important for the job I want to have.	0% (0)	6% (5)	16% (14)	36% (32)	43% (39)	4.17
17. Looking back, I wish I had not decided to try and complete my GED.	82% (74)	9% (8)	4% (4)	2% (2)	2% (2)	1.33
18. I would recommend getting a GED to people who don't have one.	0% (0)	0% (0)	3% (3)	20% (18)	77% (69)	4.73
19. I'm certain I can master the skills and information I need to pass the GED test.	1% (1)	0% (0)	10% (9)	42% (38)	47% (42)	4.33
20. I am thinking about taking some college courses after I get my GED.	2% (2)	6% (5)	23% (21)	29% (26)	40% (36)	3.99
21. I can learn the material I will need to pass the GED test, even if it is hard to understand.	0% (0)	0% (0)	3% (3)	57% (51)	39% (35)	4.36
22. It is important for me to be good at learning new things.	0% (0)	1% (1)	6% (5)	43% (39)	50% (45)	4.42
23. I would take some job training or vocational courses if they were available.	0% (0)	4% (4)	24% (21)	26% (23)	46% (41)	4.13
					Total Respondents	90

Measuring the Motivation and Strategy Use of GED Students

Table 1B. Frequencies and Means for Use of Learning Strategy Items

	Response Distribution					Response Average
	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree	
1. I try to make all the different ideas fit together and make sense.	0% (0)	2% (2)	13% (12)	61% (54)	24% (21)	4.06
2. I practice the important material until I have it memorized.	0% (0)	4% (4)	13% (12)	56% (50)	27% (24)	4.04
3. I review my notes and course materials over and over.	0% (0)	6% (5)	21% (19)	48% (43)	26% (23)	3.93
4. I try to relate what I'm learning to what I already know.	0% (0)	1% (1)	7% (6)	60% (53)	33% (29)	4.24
5. I stop once in a while and go over what I have been studying.	0% (0)	2% (2)	10% (9)	66% (59)	22% (20)	4.08
6. When material is difficult to understand, I change how I try to learn it.	0% (0)	10% (9)	22% (20)	48% (43)	20% (18)	3.78
7. Before I begin to study, I think about what I want to get done.	1% (1)	6% (5)	16% (14)	51% (46)	27% (24)	3.97
8. I make up my own examples to help me understand important ideas and information.	1% (1)	18% (16)	30% (27)	33% (30)	18% (16)	3.49
9. I outline each lesson to help me organize my thoughts.	2% (2)	17% (15)	29% (26)	39% (35)	12% (11)	3.43
10. I always spend time thinking about the best way to do an assignment before I get started on it.	0% (0)	16% (14)	32% (29)	39% (35)	13% (12)	3.50
11. I study differently depending on what the lesson is about.	0% (0)	9% (8)	24% (22)	51% (46)	16% (14)	3.73
12. I often check to make sure I really understand a lesson.	0% (0)	2% (2)	11% (10)	58% (52)	29% (26)	4.13
13. I make charts, diagrams, or tables to help me organize the material I need to learn.	4% (4)	19% (17)	29% (26)	31% (28)	16% (14)	3.35
14. I use a particular system to keep all the materials I need to learn in order and easy to find.	1% (1)	10% (9)	19% (17)	47% (42)	22% (20)	3.80
15. I double check my work to make sure I am doing it right.	0% (0)	3% (3)	8% (7)	61% (54)	27% (24)	4.13
16. I often change how I do my assignments to fit with what my teacher wants or expects.	0% (0)	17% (15)	31% (28)	36% (32)	16% (14)	3.51
17. I spend time memorizing key facts, definitions, or equations.	0% (0)	8% (7)	27% (24)	47% (42)	18% (16)	3.75
18. Before starting a lesson, I try to figure out the best way to do it.	1% (1)	13% (12)	24% (21)	47% (42)	15% (13)	3.61
				Total Respondents	89	

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Table 1C. Frequencies and Means for Regulatory and Instructor Support Items

	Response Distribution					Response Average
	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree	
1. My teacher responds very quickly to questions or concerns.	0% (0)	2% (2)	2% (2)	21% (19)	75% (68)	4.68
2. I use a planner, schedule or calendar to organize my time.	4% (4)	16% (15)	41% (37)	30% (27)	9% (8)	3.22
3. If I don't understand something in a lesson I ask the teacher for help.	0% (0)	0% (0)	14% (13)	32% (29)	53% (48)	4.39
4. I frequently put off getting started on my GED assignments.	20% (18)	34% (31)	31% (28)	12% (11)	3% (3)	2.45
5. I would rather do worse on an assignment than ask for help.	59% (54)	36% (33)	1% (1)	2% (2)	1% (1)	1.49
6. When I ask for help in a lesson it is because I want to learn how to do the work.	0% (0)	1% (1)	1% (1)	40% (36)	58% (52)	4.54
7. I feel I have a good relationship with my teacher.	0% (0)	0% (0)	9% (8)	36% (32)	56% (50)	4.47
8. I look at a schedule or calendar every day to see what I need to get done.	7% (6)	20% (18)	36% (33)	26% (24)	11% (10)	3.15
9. If I don't understand something in a lesson I get help from a friend or family member.	4% (4)	4% (4)	20% (18)	41% (37)	31% (28)	3.89
10. I have a system for managing the time I spend on my studies.	8% (7)	18% (16)	30% (27)	36% (33)	9% (8)	3.21
11. I wait to study until the last minute.	21% (19)	37% (33)	31% (28)	9% (8)	2% (2)	2.34
12. I have specific times set aside during the week to get my studying done.	3% (3)	14% (13)	31% (28)	34% (31)	18% (16)	3.48
					Total Respondents	90

	Response Distribution					Response Average
	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree	
13. It feels like I am completely on my own to learn the material for my GED.	37% (34)	34% (31)	12% (11)	12% (11)	4% (4)	2.12
14. Others would think I was dumb if I asked for help with my GED work.	54% (49)	39% (35)	6% (5)	1% (1)	0% (0)	1.53
15. I often make excuses for not starting my GED work.	43% (39)	35% (32)	16% (15)	5% (5)	0% (0)	1.85
16. I get feedback on my work very promptly.	1% (1)	4% (4)	7% (6)	43% (39)	44% (40)	4.26
17. My GED instructor really cares about how I am doing.	3% (3)	1% (1)	3% (3)	25% (23)	67% (61)	4.52
18. I put off studying for a lesson, even when it is important.	34% (31)	38% (35)	20% (18)	8% (7)	0% (0)	2.01
19. I feel like my teacher takes a personal interest in my progress.	0% (0)	0% (0)	7% (6)	38% (35)	55% (50)	4.48
20. When I ask for help with a lesson I just want to quickly get the answer I need.	21% (19)	30% (27)	23% (21)	20% (18)	7% (6)	2.62
21. I often set goals or make lists for what I need to get done each day.	3% (3)	18% (16)	41% (37)	27% (25)	11% (10)	3.25
22. I promise myself I will do some studying, then put it off anyway.	21% (19)	36% (33)	26% (24)	14% (13)	2% (2)	2.41
					Total Respondents	90

Scale Reliability and Descriptive Statistics

Table 2 presents reliability and descriptive information for the motivational, strategy use, self-regulatory and instructor support scales that were constructed. All of the self-report scales had acceptable reliabilities (α), ranging from .67 to .85, which are considered adequate and consistent with values obtained in previous studies. These scores indicate that students provided consistent responses to those items that were intended to assess a particular underlying construct.

In line with the results for individual items, the motivation scales had means that approached the high end of the response scale. Substantively, these results indicate that students in this sample were adaptively motivated. In particular, they reported that the GED program was very useful for obtaining a better job and for achieving other life goals. Similarly, what they learned in the GED program was reported to be important for maintaining a more positive identity, such as considering themselves better persons, who are good at learning new things. Their high level of mastery orientation also suggests that these students wanted to learn as much as they could—to acquire new skills and information. They also reported being highly efficacious, that is, confident they could learn the material in the program and pass the GED test. In fact, none of the mean scores for the motivational scales were below the midpoint (3.0) of the response scale. Students were less polarized ($Mean = 3.2$) concerning the costs of their GED investment, with some reporting that doing so was costly (giving up a lot and things they enjoy to do well and to earn their GED), whereas others considered doing so less onerous.

Table 2. Descriptive Statistics for Scales and Indicators

Scale	Items	α	Min	Max	Mean	SD
Motivation						
Utility	5	.79	2.6	5.0	4.4	.52
Importance	3	.67	2.7	5.0	4.4	.62
Self Efficacy	4	.67	3.0	5.0	4.3	.49
Mastery	3	.67	2.3	5.0	4.5	.51
Cost	3	.83	1.0	5.0	3.2	.94
Strategies and Regulation						
Cognitive strategies	9	.85	1.4	5.0	3.7	.62
Metacognitive strategies	9	.84	1.4	5.0	3.8	.56
Help Seeking	8	.69	1.4	5.0	4.4	.57
Time Management	5	.85	1.0	5.0	3.2	.82
Procrastination	5	.82	1.0	4.2	2.3	.78
Context						
Instructor Support	5	.75	2.8	5.0	4.4	.54
Choice-related Attitudes						
Avoid Working on GED	1		1.0	5.0	1.8	.80
Recommend GED	1		3.0	5.0	4.7	.54
Take Job Training	1		2.0	5.0	4.1	.93
College after GED	1		1.0	5.0	4.0	1.07
Regret GED	1		1.0	5.0	1.3	.85

Scores reflecting the incidence of learning strategies and regulation in this sample were more symmetrically distributed than were the motivation scale values. As shown in Table 2, means tended more toward the midpoint of the response scale. Thus students varied in their self-reported use of cognitive strategies such as rehearsal to memorize material, and elaboration designed to form connections between new and previously acquired knowledge, and organization. They also reported varying levels of metacognitive strategy use including planning, comprehension monitoring, and regulation of strategy use. At least as reported, the students indicated strong intentions to seek, and not to avoid seeking, help when needed (*Mean* = 4.4), which may be to some degree attributable to the high level of perceived support from their teachers (*Mean* = 4.4). Students reported moderate levels of time management (*Mean* = 3.2), and relatively low levels of procrastination (*Mean* = 2.3).

Five individual items were included as self-reported indicators of students' attitudes about choosing to pursue their GED or other educational opportunities. As shown in the last four rows of Table 2, the pattern of means reveal that students in this sample were both satisfied with and motivated to succeed in the program. Specifically, virtually all of the students either agreed (20%) or strongly agreed (76%) that they would recommend that others obtain their GED. Consistently, 90% disagreed or strongly disagreed with the statement that they regretted deciding to complete their GED. Most also reported they would take job training courses if available and had thought about taking some college courses after obtaining their GED. The high mean on the instructor support scale also indicates that students felt positively about their experience in distance educational process.

Bivariate Relations

Correlations between students' motivation-related beliefs and cognitive and regulatory strategy use are shown in Table 3. Once again, the results for this sample of students are consistent with those found previously, and, importantly, relationships are manifest despite the relatively low variance for the motivation-related scales. As expected, these results indicate that students who reported more adaptive motivational beliefs also tended to report more frequent use of cognitive and regulatory strategies that contribute to greater learning. In particular, the moderately high correlations indicate that the more students reported that GED preparation was useful and important, and that they were confident and wanted to master and understand the material, the more they also reported having employed both cognitive and metacognitive strategies, intended to seek needed help, and managed their time. In contrast, students who felt learning was more useful and important, and who were efficacious and mastery oriented tended to report lower levels of procrastination. Interestingly, the costs that students reportedly associated with pursuing their GED was related positively to some forms of strategy use as well as procrastination.

Table 3. Correlations Between Motivation and Strategies/Regulation

Strategies/Regulation	Motivation				
	Utility	Importance	Efficacy	Mastery	Cost
Cognitive strategies	.55***	.63***	.55***	.52***	.23*
Metacognitive strategies	.52***	.61***	.50***	.41***	.25*
Help Seeking	.28**	.41***	.42***	.40***	.09
Time Management	.33***	.32**	.21*	.35***	-.05
Procrastination	-.22*	-.18	-.31**	-.34***	.30**

* $p < .05$ ** $p < .01$ *** $p < .001$

Associations between motivation-related variables and both the self-reported single-item indicators described previously and behavioral outcomes are shown in Table 4. These results were much as expected for the single item indicators of students’ attitudes about continuing to pursue their GED or other educational opportunities. All of the adaptive motivational variables were related positively to students’ intentions to recommend that others obtain their GED, take job training, attend college after obtaining their GED, and inversely related to regret they chose to obtain their GED. Interestingly, however, the judged cost of obtaining their GED was not related to any of these attitudes. The estimate of cost, therefore, appears to have a more complex influence on students than other motivation-related variables.

Table 4. Correlations Between Motivation and Students Choice-related Attitudes and Behavioral Indicators of Performance

	Motivation				
	Utility	Important	Efficacy	Mastery	Cost
Choice-related Attitudes					
Avoid Working	-.32***	-.29***	-.23*	-.21*	-.10
Recommend GED	.47***	.46***	.37***	.37***	.02
Take Job Training	.42***	.51***	.38***	.39***	.19
College after GED	.28**	.30**	.41***	.37***	.06
Regret	-.27**	-.25*	-.20	-.31**	.08
Behavioral Indicators of Performance					
Weeks in Program	.13	-.01	.08	-.06	-.03
Seat Time Hrs.	.07	-.05	-.07	.03	-.18
Lessons Completed	.12	.10	.02	.12	-.04
Seat Time per lesson	-.16	-.21	-.12	-.15	-.13

* $p < .05$ ** $p < .01$ *** $p < .001$

Behavioral outcomes consisted of the number of weeks in the program, hours of seat time, number of lessons completed, and the seat time per lesson. The latter can be considered a measure of efficiency: more efficient students should require less time to complete a lesson. There were no statistically significant relations between motivation-related variables and these behavioral outcomes. However, there are some suggestive

trends. Specifically, the more that students considered obtaining a GED to be useful, the greater the number of weeks in the program and the number of lessons completed. Seat time per lesson is inversely related to all of the motivational variables. Thus, more motivated students tended to spend less time per lesson, which – as suggested previously— may be an indication of greater efficiency. It should be emphasized again, however, that these are very weak trends.

Conclusions and Implications

As a whole, findings provide for several notable conclusions regarding the goals of this pilot study. One, the reliabilities of all measures were within the bounds of acceptable. This finding indicates that the items and methodology used in this study are adequate and could be used successfully in a larger and more elaborate study.

Two, evidence from the intercorrelations of the motivational, strategy use and regulatory scales provide some support for the internal validity of these measures. The pattern of relations among the motivational beliefs and both the more adaptive and maladaptive indicators of students' engagement and use of learning strategies was as expected. Moreover, these relations were similar to previous findings with younger populations of students in more traditional settings. In particular, the motivational beliefs were associated positively with the more adaptive forms of strategy use and regulation and were associated negatively with procrastination.

Three, and with regard to a more substantive conclusion, findings indicate that participants in the study were highly motivated students. They consider the program valuable in terms of its utility and importance to them as persons, and consider themselves efficacious, while indicating that being in the program required a moderate level of sacrifice. Quite important for program evaluation is the fact that virtually all the students reported being strongly supported by their instructors. They would recommend the program to others and have little regret about having chosen to obtain their GED. The direct association between motivation and various dimensions of self-regulated learning are consistent with evidence obtained in many other populations, despite the relatively restricted range of levels of motivation in the present sample.

These findings must, of course, be considered in light of certain limitations and areas that could be improved upon in future studies. One limitation is the relatively low participation rate of students from the programs sampled. This limitation is not a serious threat with regard to the goals of the present study. However, a similar problem would be more serious for a larger study that was designed to draw more general conclusions about the population of adult learners in a distance education context. Thus, steps will need to be put in place to ensure a higher participation rate and that students who do participate are representative of the larger population when conducting any future studies.

A second limitation is that the response distribution for the individual motivational items is less than optimal. However, it is uncertain as to whether this pattern reflects a psychometric anomaly or whether it represents a genuine endorsement of these statements by participants. The programs sampled for this study have systematic selection

processes that might tend to eliminate students who would hold the least adaptive motivational beliefs. Hence, one reason for the elevated means might be that students permitted to enter the programs actually have more adaptive motivational beliefs than the typical adult education learner. Nonetheless, the psychometric properties of the items and scales would be improved if students utilized a greater range of responses. This could be achieved by modifying the wording of some items to be make strong endorsement less likely or by creating items that would need to be reverse coded.

A third and related limitation is the possibility that a self-presentation bias is present given that responses were not anonymous. Students may have felt compelled to provide more adaptive responses than they might have given with greater assurances of anonymity. This issue could be addressed in further studies by providing a greater guarantee of anonymity or by including a scale that assesses the degree to which students are reporting socially desirable responses.

A fourth area in need of improvement concerns the indicators of students' effort and performance in their GED course. One concern here is the unavailability of GED test scores that precluded estimating whether the dimensions assessed would be related to this particular performance outcome. Actual performance on the GED test is the ultimate and perhaps most critical outcome for these students and future studies should attempt to collect student data with regard to scores on this test. At the same time, the indicators of effort and performance that were included were not significantly related to students' motivational beliefs. One possible explanation for this latter finding is that the relatively small sample size was insufficient to provide the power needed to detect these relations. Future studies with larger samples are necessary to make more definitive conclusions about these relations. In addition, additional work is necessary to evaluate the extent to which these more localized indicators of effort and performance are related students' learning and performance on their GED test.

Although important to consider, these limitations are not acute and could be addressed within the context of additional research. In addition, this pilot study provided encouraging evidence regarding the psychometric properties of the instruments and methods necessary to conduct these future studies. That is, findings overall support the view that adult students' motivation and use of learning strategies can be evaluated in a reliable and valid fashion using an on-line survey. Also, given reports of moderate levels of reported self-regulation, the survey could be especially useful in detecting whether, in addition to content, students' use of valuable learning strategies also increased as a function of their GED preparation experience. In sum, findings from the pilot study suggest that future research in this area is viable and could provide important insight into the motivation, learning, and achievement of adult learners in a distance education context.

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Appendix: Codebook of Survey Items

Self-Regulated Learning and Student's Engagement and Performance within IDEAL Courses

Section A: Motivation

In the exhibit below, the numbers to the left of each item refer to the numbering within the survey. The numbering began at "1" within each section, so numbers are repeated. The response scale for all items was: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. "R" after the item indicates it was reversed when entered into the scale.

Utility– Students views schooling/getting GED as useful for future.

- 11. What I learn while studying for my GED is valuable because it will help me in the future.
- 13. Some of the information I learn while getting my GED will help me in my daily life.
- 04. Having my GED will be useful for me later in life.
- 02. Having my GED will help me get a better job.
- 16. The skills I learn as part of getting my GED will be important for the job I want to have.

Importance – Student views material as important.

- 22. It is important for me to be good at learning new things.
- 10. Having a GED will make be feel better about who I am.
- 03. What I learn while getting my GED will make me a better person.

Mastery Orientation – Student focuses on learning goals when doing academic work.

- 05. One of my goals for each lesson is to learn as much as I can
- 12. One of my goals for each lesson is to master a lot of new skills or information.
- 09. It's important to me that I really understand the material I am learning for my GED.

Self-efficacy for learning – Student is confident in their ability to learn.

- 19. I'm certain I can master the skills and information I need to pass the GED test.
- 15. I'm certain I can figure out how to do the most difficult work to earn my GED.
- 06. I can do almost all the work to earn my GED if I don't give up.
- 21. I can learn the material I will need to pass the GED test, even if it is hard to understand.

Cost– Students views pursuing GED as having high cost.

- 14. I will need to invest a lot of my time to earn my GED.
- 01. I will have to give up a lot to do well in my GED studies.
- 07. I will need to give up other activities I enjoy to study for my GED.

Choice-related Attitudes (Regret) – Student attitudes about working on their GED or pursuing other educational opportunities

- 08. I won't do any more work for my GED unless I have to. (R)
- 17. Looking back, I wish I had not decided to try and complete my GED. (R)
- 18. I would recommend getting a GED to others in my position.
- 20. I am thinking about taking some college courses after I get my GED.
- 23. I would take some job training or vocational courses if they were available to me.

Section B: Use of Learning Strategies

Cognitive Strategies– Student uses rehearsal and elaboration strategies.

- 17. I spend time memorizing key facts, definitions, or equations.
- 02. I practice the important material until I have it memorized.
- 03. I review my notes and course materials over and over.
- 08. I make up my own examples to help me understand important ideas and information.
- 01. I try to make all the different ideas fit together and make sense.
- 04. I try to relate what I'm learning to what I already know.
- 13. I make charts, diagrams, or tables to help me organize the material I need to learn.
- 09. I outline each lesson to help me organize my thoughts.
- 14. I use a particular system to keep all the materials I need to learn in order and easy to find.

Metacognitive Strategies–Student uses planning, monitoring and regulation strategies.

- 18. Before starting a lesson, I try to figure out the best way to do it.
- 07. Before I begin to study, I think about what I want to get done.
- 10. I always spend time thinking about the best way to do an assignment before I get started on it.
- 15. I double check my work to make sure I am doing it right.
- 05. I stop once in a while and go over what I have been studying.
- 12. I often check to make sure I really understand a lesson.
- 16. I often change how I do my assignments to fit with what my teacher wants or expects.
- 11. I study differently depending on what the lesson is about.
- 06. When material is difficult to understand, I change how I try to learn it.

Section C: Use of Regulatory Behaviors

Time management – Student has a time management system.

- 10. I have a system for managing the time I spend on my studies.
- 12. I have specific times set aside during the week to get my studying done.
- 08. I look at a schedule or calendar every day to see what I need to get done.
- 02. I use a planner, schedule or calendar to organize my time.
- 21. I often set goals or make lists for what I need to get done each day.

Measuring the Motivation and Strategy Use of GED Students

Help Seeking – Student seeks help while completing academic work.

- 03. If I don't understand something in a lesson I ask the teacher for help.
- 09. If I don't understand something in a lesson I get help from a friend or family member.
- 14. Others would think I was dumb if I asked for help with my GED work.
- 05. I would rather do worse on an assignment than ask for help.
- 20. When I ask for help with a lesson I just want to quickly get the answer I need.
- 06. When I ask for help in a lesson it is because I want to learn how to do the work.

Procrastination – Student procrastinates while completing academic work.

- 22. I promise myself I will do some studying, then put it off anyway.
- 04. I frequently put off getting started on my GED assignments.
- 15. I often make excuses for not starting my GED work.
- 11. I wait to study until the last minute.
- 18. I put off studying for a lesson, even when it is important.

Instructor support – Student felt supported by instructor of course.

- 13. It feels like I am completely on my own to learn the material for my GED.
- 07. It is easy to maintain a sense of close contact with my teacher.
- 01. My teacher responds very quickly to questions or concerns.
- 16. I get feedback on my work very promptly.
- 19. I feel like my teacher takes a personal interest in my progress.
- 17. My GED instructor really cares about how I was doing.