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Assessing Academic Intrinsic Motivation: A Look at Student Goals and Personal Strategy

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Abstract

Intrinsic motivation has been widely researched by educational psychologists, social psychologist, and by many other intuitive individuals. Along with the research came many definitions and many ways to measure the construct of intrinsic motivation in operational terms. However, the goal of past research was to define the factor or to find what types of relationships it has to other constructs so that intrinsic motivation can be better identified and less abstract. It has also been said that extrinsic factors need to be identified. One thing that has been left hypothetical is what areas in life does intrinsic motivation effect? If a positive effect is found, then there needs to be an expression of intrinsic factors and a depression of extrinsic factors exposed to such an area in life. This paper takes the first step in accumulating all factors involved in both intrinsic and extrinsic motivation in the area of college academics by creating an inventory titled "Academic Intrinsic Motivation." This study is the first of many that will lead to guidance in academic reality.

Assessing Academic Intrinsic Motivation: A Look at Student Goals and Personal Strategy

Academic intrinsic motivation is a factor that is essential for college success. A large number of students carry out education to or past the college level. The motivations behind such academic persistence vary across many intrinsic and extrinsic factors. Many college students find that their level of motivation is not sufficient enough to guide them in carrying out their academic careers. An example would be the student who is studying to be a doctor because his father wants him to be a doctor. In the college atmosphere, the student's parents are not there to make him do the work necessary to become a doctor; therefore, the motivation is lost. Such a student may seek academic counseling in hopes to find an answer to why such motivation is lost. The purpose of this study is to propose an inventory that will assess student motivations in the classroom. This inventory is designed for academic counselors to administer to students whom seek guidance for the purpose of understanding the student's motivation in a classroom setting. The knowledge that the counselor would gain about the student will allow the counselor to direct counseling techniques toward a specific academic problem.

Intrinsic Motivation

Intrinsic motivation has been defined as (a) participation in an activity purely out of curiosity, that is, for a need to know about something; (b) the desire to engage in an activity purely for the sake of participating in and completing a task; and (c) the desire to contribute (Dev, 1997). Intrinsic motivation requires much persistence and effort put forth by an individual student. Students with intrinsic motivation would develop goals such as, the goal to learn and the goal to achieve. A mastery goal, the desire to gain understanding of a topic, has been found to correlate with effective learning strategies, positive attitudes toward school, the choice of difficult tasks as opposed to a simple task, perceived ability, effort, concern of future consequences, self-regulation, the use of deep cognitive processes, persistence, achievement, choice and initiative (Archer, 1994; Miller, Greene, Montalvo, Ravindran, & Nichols, 1996; Garcia & Pintrich, 1996).

Past research on intrinsic and extrinsic motivation groups students into three main academic dimensions; those who have a (a) mastery or task orientation, (b) ego orientation, or (c) work avoidant orientation. Mastery or task orientation refers to the student who engages in an activity simply to gain knowledge, skill, or to contribute to the field of knowledge. This type of motivation can be seen as a non-need approach to education: The motive behind task engagement is not to fulfill a personal need. However, two

prominent motivation researchers, Edward Deci, and Richard Ryan (1985), found that intrinsic motivation could stem from the organism's need to be competence and self-determining. With this in mind, I propose yet another factor that makes up for the task orientation (rather than a learning orientation) involving a need to prove competence to one's self, the need for achievement. This leaves the intrinsic motivation dimension to be made up of two factors: Mastery orientation and The need for achievement.

The 16 Personality Questionnaire (1986) defines one with the need for achievement as "Mature, forceful, strong, dominant, demanding, and foresighted; as being independent and self reliant; and as having superior intellectual ability and judgement." I generalized this description to match up with academic behavior as a model for designing the need for achievement subscale for my questionnaire. Also as a model, I used their description of one with "intellectual efficiency" to describe those with a mastery orientation: "Efficient, clear-thinking, capable, intelligent, progressive, planful, thorough, and resourceful; as being alert and well-informed; and as placing a high value on cognitive and intellectual matters."

Extrinsic Motivation

Extrinsic motivation refers to motives that are outside of and separate from the behaviors they cause; the motive for the behavior is not inherent in or essential to the behavior itself (Hoyenga & Hoyenga, 1984). If a student studies hard to do well on a test because a good grade will result in a brand new car, then the motive behind studying is not what it is intended to do: obtain knowledge. Studying information is a prerequisite to learning; however, it is often manipulated to lead toward other things such as money, acceptance, or power. Adding an extrinsic incentive to study or complete a task has also been found to decrease intrinsic motivation (Hoyenga & Hoyenga, 1984). Such a finding is detrimental to education. It is important to research extrinsic variables so they will not be reinforced in the classroom. To help students develop academic intrinsic motivation, it is important to define the factors that affect motivation (Dev, 1997).

Researchers have studied factors such as family expectations, teacher expectations, money, and peer acceptance (pleasing others). All of these factors involve proving one’s competence to another. Extrinsic students prove one’s competence while intrinsic students improve their competence (Schraw, Horn, Thorndike-Christ, & Bruning, 1995). However, these factors do not fully explain why certain student persist in a task although they prefer not to. Two extrinsic factors that need to be further explored are 1) power motivations and 2) fear of failure.

Power motivations are often seen in students, especially in a college setting. A student who is motivated by power feels the need to control his/her environment. The best way they find to do this is to prove their competence to others. Power motivations are difficult to spot in students because unlike other extrinsic motivations, they increase achievement measures (Hoyenga & Hoyenga, 1984). This may be because achievement decreases helplessness. This motivation can be seen as an individual need that must be met in order to feel competent as a student. Fortier, Vallerand, and Guay (1995), performed a study that confirmed perceived academic competence to be directly related to autonomous academic motivation, which is directly related to school performance. Putting all this information together, we can infer that power motivations (when led to successful outcomes) can be easily mistaken for intrinsic motivation. Both appear the same; however when a block occurs in the process of reaching the goal, the intrinsic motivator will find a strategy to get around the block: the power motivator may feel frustrated and helpless (Hoyenga & Hoyenga, 1984). If this is the case, then we would find that intrinsic students would continue to persist in challenging tasks while a student with power motivations would give up in the face of difficulty. The fact is that the two goals are entirely different, only the means are the same. Although this variable may be difficult to differentiate from intrinsic motivation, it is extremely detrimental to allow such a student to experience such intense anxiety when it comes to classroom work. This type of behavior can lead to an aversive reaction toward education.

Fear of failure is inhibitory no matter which theory or example one uses to explain it. It brings about avoidant approaches to situations in order to avoid such fear. The motive to avoid failure is a general disposition to avoid failure or the capacity to react with shame and embarrassment when the outcome of an achievement task is failure. The only way to avoid failure is to avoid achievement tasks. One can see that this avoidant behavior lacks intrinsic motivation. Research shows that fear of failure is noticed most when such students are given moderately difficult task to achieve (Hoyenga & Hoyenga, 1984). Reasons for this may be that these students expect to fail at difficult tasks, and often do succeed at relatively simple tasks. If the task is simple, then the need to avoid failure will motivate the student to find the necessary means to achieve. However, if the task is moderately difficult, the anxiety that may build up could cause avoidant reactions to such a task and inhibit the necessary means to achieve.

Both of these factors clearly inhibit the characteristics of intrinsic motivation. Not only do they inhibit positive behavior, but they may cause students to avoid academics all together. One way of finding out if these

variables are, in fact, extrinsic motivators is to create an inventory that includes all factors of intrinsic and extrinsic motivation and perform several reliability and validity studies.

Evaluating Past Motivation Assessments

Jennifer Archer (1994) created an inventory to assess mastery goals, performance goals (the concern to demonstrate ability to others), and goal alienation (the lack of academic goals) in university students. The test was designed in a way so that the student could go down a list of statements and check off the statements that demonstrate their motivations in the classroom. An example of this would be: "When did you feel most successful…" Following this statement is a list of several responses that are geared toward one of the three goal orientations. Students were instructed to put a check mark next to the statements only if it applied to them. Results were analyzed by factor analysis. This is a good design for the assessment of motivation because the student is not forced to choose between one or more variables. This type of test also controls for the problems that occur with Likert scales such as the student circling all threes or creating some pattern of answers. However, this type of inventory does not tell the researcher how strongly the statement applied to a particular student. Another problem with this particular test is that the results did not support past results: This study found a significant correlation between mastery goals and performance goals, other studies did not. In addition, this study left out other student goal variables that are especially relevant to college students, such as the need to achieve or family expectations.

Miller, Greene, Montalvo, Ravindran, and Nichols (1996) used an 83-item instrument called "Attitude Toward Mathematics Survey." In this particular study, they used sub-scales that assessed 1) self-perceived ability, 2) self-regulation and cognitive strategy, 3) persistence, 4) effort, and 5) student goals, such as learning goals, performance goals, future consequences, pleasing the teacher, and pleasing the family. Items were scored on a five-point Likert scale. Although a Maximum Likelihood factor analysis of the results showed the goal orientation factors to be grouped together, these results may not represent the entire school population. This inventory tested student

attitudes toward mathematics and may not be useful for assessing general motivations in the classroom.

The Motivated Strategies for Learning Questionnaire (MSLQ) is an 81-item inventory that measures two different types of scales: motivation and learning. Motivational scales include: Intrinsic goal orientation, extrinsic goal orientation, task value, control beliefs about learning, self-efficacy, and test anxiety. Learning scales include: rehearsal, elaboration, organization, critical thinking, peer learning, help seeking, metacognition,

effort management, time and study environment. Pintrich, Smith, Garcia, and McKeachie (1993) used this inventory in a study to show predictive validity of school achievement. In this study, they found that intrinsic goal orientation, along with other variables, was positively related to achievement. This inventory is effective in comparing motivational and learning factors within and outside of the inventory. However, there are only four questions each that assess intrinsic and extrinsic motivation. With all the factors involved in both areas, these sections could not possibly measure student goals in the classroom.

Fortier, Vallerand, and Guay (1995) did a study to see the relationships between intrinsic motivation, extrinsic motivation, and autonomy. This study used a French version of the Academic Motivation Scale. This scale assesses intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. This study confirmed a motivational model using subscales that measure competence, self-determination, and autonomy. This model supports prior research done by Cordova and Lepper (1996). This study reports that this test has been found to have internal consistency, test-retest reliability, and repeatedly supported past findings. However, there are many factors of extrinsic motivation that are not accounted for in this inventory such as, power motivations or fear of failure.

Although a Children's Academic Intrinsic Motivation Inventory has been developed (Dev, 1997), it is designed to test intrinsic and extrinsic motivation toward four different subjects: mathematics, english, science, and geography. This type of inventory allows one to compare to the general population, but a researcher would not be able to identify what specific motivational goals the student has. For example, after a student is assessed using this measure, the researcher may find that he/she is extrinsically motivated when completing a mathematics task. Is this because the student is afraid to receive a bad grade, or because there is another external incentive? This inventory does not allow a researcher to answer this question. In addition, an academic intrinsic inventory for college students needs to be developed keeping in mind all of the problems with past inventories. Many extrinsic factors have not yet been labeled as extrinsic motivators and need to be known for the sake of applying this information to the real academic world.

Academic Intrinsic Motivation Questionnaire

The proposed inventory will be made up of six factors: two intrinsic factors and four extrinsic factors. Intrinsic motivation factors include: mastery goals and the need for achievement. Extrinsic motivation factors include: authority expectations (family and professor), peer acceptance, power motivations, and fear of failure. I will begin with ten statements for each factor. Each college student will give themselves a rating for each

question on a 7-point Likert scale (1= does not describe me; 7= absolutely describes me). One who rates themselves highly on intrinsic statements and low on extrinsic statements will be considered a student with high intrinsic motivation. One who rates themselves highly on extrinsic factors and low on intrinsic factors will be considered a student with low intrinsic motivation. For the purpose of obtaining construct validity, a single score of instrinsic motivation will be assigned to each subject. A sample inventory is provided in Appendix A.

Metacognition and Validity

Metacognition is defined as knowledge about one's cognition and regulation of one's cognition (Schraw & Dennison, 1994). In other words, a student who is aware of what information he/she learns and how much information can be learned by that particular student has high metacogniton. Students with high levels of metacognition are able to plan, monitor, and evaluate their learning. Such students have self-regulation that enables them to be aware of their thinking processes while studying. These learners adaptively regulate their use of cognitive tactics and strategies in academic tasks (Winne, 1996). Students with intrinsic goal orientations also have high metacognitive ability (Pintrich & DeGroot, 1990). Intrinsic motivation was found to be related to metacognition using both the Metacognitive Awareness Inventory (MAI) and the MSLQ (Pintrich & DeGroot, 1990; Garcia & Pintrich, 1996; Schraw, Horn, Thorndike-Christ, & Bruning, 1995). The MAI is a 52-item inventory designed by Schraw and Dennison for college students. This study included the use of the MSLQ as a tool for validation.

Method

Participants

Eight-one undergraduate students from a private liberal arts college participated in this research. All students were given two copies of the informed consent sheet; one which they will keep, and one which will be handed in to me. The students completed two questionnaires. Administration time ranged from 20-30 minutes. The completed inventories did not include the student's name to ensure confidentiality.

Materials and Procedures

The proposed Academic Intrinsic Motivation Questionnaire and the three subscales form the MSLQ are each described in detail above (Questionnaires appear in Appendix A). Responses were analyzed by performing a reliability analysis (coefficient alpha) on the proposed inventory to check for unreliable items. The second set of analysis was achieved by performing correlation analysis to compare the results with past research that has been

done with the MSLQ. The hypothesis are as follows: 1)There will be a positive relationship between the total intrinsic motivation score obtained from the proposed inventory and the intrinsic subscale of the MSLQ, 2)There will be a negative relationship between the total intrinsic motivation score and the extrinsic subscale of the MSLQ and, 3)The metacognition subscale will positively correlate with the total intrinsic motivation score.

Results

The first set of results were found by performing a reliability analysis on the entire inventory to test for reliability. The results obtained was a coefficient alpha score of .7748 (standardized reliability is .70). Reliability analysis is displayed in Appendix C. These results suggest that the test is a reliable test. In other words, if the inventory were to be filled out by the same individuals at a later time, then the results should be similar.

The second set of results was obtained by performing correlation analysis. In accordance with my first hypothesis, the total intrinsic motivation score correlated positively with the intrinsic subscale of the MSLQ. Also, as I have hypothesized, the total intrinsic motivation score correlated negatively with the extrinsic subscale of the MSLQ. These results reveal construct validity within the proposed Academic Intrinsic Motivation Inventory.

My last hypothesis, unfortunately, was not supported. However, the results also were not in accordance with past research. My hypothesis that metacognition would correlate positively with the total intrinsic motivation score was based on past research conducted using the MSLQ (Pintrich & DeGroot, 1990). The results were replicated in my study; however, the metacognition score aslso correlated positively with the extrinsic subscale of the MSLQ. Correlation results are shown in Appendix C. These results suggest that the construct of metacognition may be independent of intrinsic and extrinsic motivation.

Discussion

Although the proposed inventory yielded reliable results, the coefficient alpha score was not a high score. Also, some of the items correlated negatively with all of the other items suggesting that the particular question may be measuring a separate construct (reliability analysis is shown in Appendix C). Because of these constraints, a revision of the inventory is needed. This can be done by performing a reliability analysis of each subscale to eliminate those items that do not correlate positively with the other items in the subscale. After this process is completed with all subscales, the next step would be to run a reliability analysis on the entire

inventory once again. Any items that do not correlate positively are also eliminated. The reliability results after this process reveal a coefficient alpha score of .8627 (Reliability analysis appears in Appendix C.).

The support of my first and second hypotheses shows that the inventory as a whole accurately measures student motivations in the classroom. Therefore, the individual factors must play an important role in the explanation of why students persist in academic tasks.

The finding that metacognition was not related to the total intrinsic motivation score is called into question. Metacognition was found to be correlated with the intrinsic and extrinsic subscales of the MSLQ. It may be that rather than metacognition being related only to intrinsic motivation, metacognition may be related to academic motivation in general. Perhaps pure motivation, whether intrinsic or extrinsic, is required for an individual to utilize metacognitive strategies.

Another result that came out of this research is that the construct of "fear of failure" does seem to be related to academic motivation as a whole. The items on the inventory are positively correlated with the rest of the items suggesting that the factors have something in common: student goals in the classroom. However, given the results of the analysis, the need for power seems to be a separate construct independent of academic motivation. The argument that was made for the "need for power" was that the student would experience a feeling of helplessness after receiving a bad grade, also, their competitive nature was addressed. The two questions that clearly define this proposed construct did, in fact, correlate with the test as a whole: "I feel helpless about school after receiving a few bad grades," and "It does not bother me when others perform better than I on a test." Perhaps the items in this inventory need to be revised to address these particular ideas alone.

Important Implications

The proposed inventory invites many opportunities for researchers in the fields of both educational psychology and social psychology. Much basic research has been done on intrinsic and extrinsic motivation, but applied research in this area is rare. Once this inventory is revised and retested, it can be used in a college counseling setting to assist counselors in understanding a particular student's motivations in the classroom. Once the inventory is further validated, the separate factors can be scored independently. The counselor then will be able to place the student on a continuum (for example, 7-77 on a 10 item subset). This will show the level at which one focuses on that particular factors while engaging in academic tasks.

In order to apply this research, much has to be done. The next step is to collect enough data to perform a factor analysis. Based on those results, clearly defined factors will be construed. After revising even further,

more reliability tests must be given. After the completion of the inventory, a way to score the individual factors must be attained for simple analysis of the college counselors. Also, a list of counseling techniques would be helpful from the researcher who defined these factors. For example, someone who is failing in college needs academic counseling. Perhaps the individual completes this inventory and the counselor finds that the student has a high score on the "fear of failure" construct. One technique is for the counselor to create a less threatening environment for the student. In other words, suggest to the student that cooperative learning may reduce some of the anxiety and make studying more enjoyable.

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Appendix A

Academic Intrinsic Motivation
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Read each question carefully and choose the number that best describes you. There are no right and wrong answers, simply choose 1, if the sentence does not describe you at all; 7, if the sentence strongly describes you. If you describe yourself as somewhere in the middle, please rate yourself accordingly.

	Does not describe me						Strongly describes me
1. I want to learn everything I need to learn.(Need)	1	2	3	4	5	6	7
2. Finishing an exam first leaves me afraid that I did something wrong or forgot something.(Fear)	1	2	3	4	5	6	7
3. No matter how much I like or dislike a class, I still try to learn from it.(Mas)	1	2	3	4	5	6	7
4. When faced with a difficult test, I expect to fail before I expect to do well.(Fear)	1	2	3	4	5	6	7
5. I sign up for the same classes that my friends sign up for.(Peer)	1	2	3	4	5	6	7
6. I feel that challenging assignments can be great learning experiences.(Mas)	1	2	3	4	5	6	7
7. College helps me to gain valuable knowledge.(Mas)	1	2	3	4	5	6	7
8. My quality of performance is dependent on my grade in the class.(Mas)-R	1	2	3	4	5	6	7
9. Academics are the last thing that I want to talk about when hanging out with my friends.(Peer)-R	1	2	3	4	5	6	7
10. When I receive a low grade on an exam, I try to hide it from others.(Peer)	1	2	3	4	5	6	7
11. I feel good about myself when others do not understand material that is clear to me.(Pow)	1	2	3	4	5	6	7
12. I learn simply for the sake of learning.(Mas)	1	2	3	4	5	6	7
13. When I have to make an academic choice, I go to my parents for advice.(Auth)	1	2	3	4	5	6	7
14. I prefer difficult tasks as opposed to moderate tasks.(Pow)-R	1	2	3	4	5	6	7
15. I never boast about my grades.(Pow)-R	1	2	3	4	5	6	7

16. I am not one of the smartest students in my class.(Pow)-R	1	2	3	4	5	6	7
17. I am satisfied with an average grade, as long as I learn from my mistakes.(Pow)-R	1	2	3	4	5	6	7
18. I sign up to take the easiest teacher so that my grades will be better.(Pow)	1	2	3	4	5	6	7
19. I feel helpless about school after receiving a few bad grades.(Pow)	1	2	3	4	5	6	7
20. I have no preference to impress "power figures".(Auth)-R	1	2	3	4	5	6	7
21. Finishing an exam quickly makes me feel good.(Pow)	1	2	3	4	5	6	7
22. I work best in a group environment.(Need)-R	1	2	3	4	5	6	7
23. I do all that I can to make my assignments turn out perfectly.(Need)	1	2	3	4	5	6	7
24. I feel more accepted by others when I receive a good grade on a test.(Peer)	1	2	3	4	5	6	7
25. I sign up for the classes that will prepare me for the future.(Need)	1	2	3	4	5	6	7
26. I have high expectations of myself.(Need)	1	2	3	4	5	6	7
27. I see myself as well-informed in many academic areas.(Mas)	1	2	3	4	5	6	7
28. I get frustrated when I find out that I did not need to study as much as I did for a test.(Need)	1	2	3	4	5	6	7
29. Sometimes I do more than I have to for an assignment to help me understand the material better.(Mas)	1	2	3	4	5	6	7
30. I find my ability to be higher than most of my peers.(Pow)	1	2	3	4	5	6	7
31. I enjoy learning about various subjects.(Mas)	1	2	3	4	5	6	7
32. Being in college gives me the opportunity to prove to my family that I can achieve something.(Auth)	1	2	3	4	5	6	7
33. I wait till the last minute to complete my assignments.(Need)-R	1	2	3	4	5	6	7
34. I would only sign up for a club if it helped me to reach a long-term goal.(Need)	1	2	3	4	5	6	7

35. I feel ashamed when I receive a low grade.(Fear)	1	2	3	4	5	6	7
36. I have no problem telling my parents when I receive a bad grade on an exam.(Auth)-R	1	2	3	4	5	6	7
37. I feel that my ability is sufficient in the classroom.(Fear)-R	1	2	3	4	5	6	7
38. Even when I have studied for hours, I don't feel that I have studied enough.(Fear)	1	2	3	4	5	6	7
39. I get nervous when my professor begins to hand back tests.(Fear)	1	2	3	4	5	6	7
40. I enjoy challenging tasks.(Fear)-R	1	2	3	4	5	6	7
41. I get frightened that I will not remember anything when I take a test.(Fear)	1	2	3	4	5	6	7
42. In my studies, I set short term, goals.(Fear)	1	2	3	4	5	6	7
43. I have no doubts that I will achieve my academic goals.(Fear)-R	1	2	3	4	5	6	7
44. My academic interests are not influenced by anyone but myself.(Auth)-R	1	2	3	4	5	6	7
45. It is important to complete assignments the way that my professor would want them completed.(Auth)	1	2	3	4	5	6	7
46. It does not bother me when others perform better than I on a test.(Pow)-R	1	2	3	4	5	6	7
47. When I do poorly on an exam, I feel that I let my professor down.(Auth)	1	2	3	4	5	6	7
48. I feel good about myself when I finish a difficult project.(Need)	1	2	3	4	5	6	7
49. I like to spend time reading about things that interest me.(Mas)	1	2	3	4	5	6	7
50. I try to live up to what my professor expects out of me in the classroom.(Auth)	1	2	3	4	5	6	7
51. I try to do my best on every assignment.(Mas)	1	2	3	4	5	6	7
52. I like to be one of the most recognized students in the classroom.(Peer)	1	2	3	4	5	6	7
53. I sign up for the same classes that my friends sign up for.(Peer)	1	2	3	4	5	6	7
54. I have the same attitude toward college as my friends.(Peer)	1	2	3	4	5	6	7

55. I study best when I am alone.(Peer)-R	1	2	3	4	5	6	7
56. I still want to go to class even when my friends don't go.(Peer)-R	1	2	3	4	5	6	7
57. I feel that the smarter I am, the more accepted I will be by other students.(Peer)	1	2	3	4	5	6	7
58. My grade point average is no where near the grade point average as my friends.(Peer)-R	1	2	3	4	5	6	7
59. I feel that I should be recognized when I demonstrate my abilities in the classroom.(Auth)	1	2	3	4	5	6	7
60. I set high goals for myself.(Need)	1	2	3	4	5	6	7

Motivated Strategies for Learning Questionnaire Subscales

1. During class time I often miss important points because I'm thinking of other things.	1	2	3	4	5
2. When reading for this course, I make up questions to help focus my reading.	1	2	3	4	5
3. When I become confused about something I'm reading, I go back and try to figure it out.	1	2	3	4	5
4. If course materials are difficult to understand, I change the way I read the material.	1	2	3	4	5
5. Before I study new course material thoroughly, I often skim it to see how it is organized.	1	2	3	4	5
6. I ask myself questions to make sure I understand the material I have been studying in this class.	1	2	3	4	5
7. I try to change the way I study in order to fit the course requirements and instructor's teaching style.	1	2	3	4	5
8. I often find that I have been reading for class but don't know what it was all about.	1	2	3	4	5
9. 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.	1	2	3	4	5
10. When Studying for this course, I try to determine which concepts I don't understand well.	1	2	3	4	5
11. When I study for this class, I set goals for myself in order to direct my activities in each study period.	1	2	3	4	5
12. Taking notes in class, I make sure I sort it out afterwards.	1	2	3	4	5

13. Getting a good grade in this class is the most satisfying thing for me right now.	1 2 3 4 5
14. In a class like this, I prefer course material that really challenges me so I can learn new things.	1 2 3 4 5
15. The most important thing for me right now is improving my overall grade point average, so my main concern for this class is getting a good grade.	1 2 3 4 5
16. In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.	1 2 3 4 5
17. I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.	1 2 3 4 5
18. 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.	1 2 3 4 5
19. The most satisying thing for mr in this course is trying to understand the content as thoroughly as possible.	1 2 3 4 5
20. If I can, I want to get better grades in this class than most of the other students.	1 2 3 4 5

Appendix C

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
MAS49	248.6800	597.8151	.1657	.7733
MAS3	248.7333	592.6847	.3222	.7687
MAS51	248.1867	588.0998	.4257	.7663
MAS6	249.2267	605.6912	.1241	.7741
MAS7	247.9200	593.4800	.3990	.7678
RMAS8	250.2000	622.4865	-.1151	.7813
MAS31	248.5467	606.6836	.1629	.7731
MAS29	249.2667	586.1712	.3824	.7665
MAS12	249.7200	603.6638	.1442	.7736
MAS27	248.6933	610.1614	.0872	.7747
RPOW46	249.6000	581.7297	.3900	.7656
RPOW14	249.5467	615.7917	-.0226	.7778
POW30	249.4400	604.7903	.1680	.7729
POW11	248.5067	589.9020	.2787	.7693
RPOW16	250.1733	621.7398	-.0979	.7831
RPOW17	249.4667	593.6847	.2169	.7715
POW18	249.5467	604.0079	.1091	.7751
POW19	249.3600	575.0714	.4690	.7628
POW21	250.0000	618.8108	-.0666	.7802
RPOW15	250.1067	624.1506	-.1305	.7827
NEED23	248.5200	584.6584	.4349	.7654
NEED25	247.9600	606.2011	.1391	.7736
NEED26	247.6667	594.9550	.2879	.7696
RNEED22	249.6533	622.1755	-.1040	.7827
NEED28	249.7600	598.9416	.1482	.7741
RNEED33	250.0133	602.5268	.1159	.7751
NEED34	250.1733	636.6858	-.2655	.7879
NEED48	247.5333	595.0090	.4164	.7681
NEED60	247.9600	593.5254	.2860	.7695
NEED1	248.1067	598.3128	.2841	.7702
FEAR4	249.5867	579.7052	.3889	.7653
FEAR2	249.3200	574.7070	.4934	.7623
FEAR35	248.4400	574.9254	.4625	.7629
RFEAR37	250.3600	612.9362	.0278	.7762
FEAR38	249.1067	567.0695	.5595	.7594
FEAR39	248.4933	575.3885	.4675	.7629
RFEAR40	249.8933	621.0695	-.0994	.7802
FEAR41	248.6400	568.4768	.4921	.7610
FEAR42	249.1867	612.9377	.0192	.7768
RFEAR43	250.2533	610.0025	.0480	.7766
AUTH13	249.4933	583.2263	.2871	.7688
RAUTH20	249.4267	592.1128	.2608	.7700
AUTH32	248.5867	576.9485	.4498	.7635
RAUTH36	250.0133	611.8241	.0061	.7794
RAUTH44	250.4267	617.4101	-.0502	.7804
AUTH45	248.0267	584.4317	.4664	.7649
AUTH47	249.5600	582.1686	.3772	.7660
AUTH50	248.8400	577.9470	.4692	.7634
AUTH59	249.6133	573.7809	.5527	.7612
RPEER9	249.4667	614.9279	-.0169	.7786
PEER10	249.8400	580.5146	.3737	.7658
PEER24	249.3600	585.2065	.3621	.7667
PEER52	249.2400	574.3470	.4620	.7628
PEER53	250.9733	600.8101	.1659	.7730
PEER54	250.1467	600.6944	.1603	.7733
RPEER55	251.3333	616.2252	-.0311	.7785
RPEER56	251.3333	630.3333	-.2455	.7832
PEER57	249.8000	579.8378	.4086	.7649
RPEER58	249.3200	613.5449	-.0074	.7793

Reliability Coefficients
N of Cases = 75.0 N of Items = 59

Alpha = .7748

Appendix C (cont.)

	Metacognition	Extrinsic	Intrinsic
AIM/Intrinsic	.1105 *n=80*	**-.2584** *n=80*	**.2319** *n=80*
Metacognition		**.2436** *n=80*	**.3433** *n=80*
Extrinsic			.1934 *n=80*

Appendix C (cont.)

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
MAS49	127.7308	391.6019	.2141	.8643
MAS3	127.8205	383.3959	.4530	.8570
MAS51	127.2564	384.3750	.4856	.8565
MAS6	128.3077	392.9431	.2664	.8617
MAS7	126.9487	388.7766	.4647	.8575
MAS31	127.6026	395.5153	.3312	.8602
MAS29	128.3077	383.0210	.4269	.8576
RPOW46	128.7179	387.9454	.2935	.8615
POW11	127.5897	395.8035	.1741	.8649
RPOW17	128.5641	395.0283	.1712	.8655
NEED48	126.6538	390.3851	.4391	.8581
NEED60	127.0385	392.0634	.2792	.8614
NEED1	127.1667	389.1797	.4277	.8581
FEAR4	128.6154	383.0709	.3430	.8602
FEAR2	128.3590	375.2201	.5060	.8551
FEAR35	127.6026	375.6452	.4663	.8563
FEAR38	128.1795	370.7466	.5556	.8535
FEAR39	127.6026	376.2166	.4745	.8560
FEAR41	127.7308	369.7318	.5146	.8546
AUTH32	127.7051	372.2366	.5396	.8540
AUTH45	127.1154	383.6099	.4729	.8566
AUTH47	128.6795	374.5323	.4976	.8553
AUTH50	127.9487	377.7116	.4780	.8560
AUTH59	128.7564	373.4594	.5878	.8531
PEER24	128.4744	386.0188	.3382	.8601
PEER52	128.3590	374.6227	.4864	.8556
PEER54	129.2692	396.3811	.1755	.8646
PEER57	128.9359	377.2296	.4553	.8566

Reliability Coefficients

N of Cases = 78.0 N of Items = 28

Alpha = .8627