

## Mastery Goal Orientation Promoting Students' Expectancies for Success And Self-Efficacy

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### Abstract

The purpose of this research is to examine the impact of Achievement Goal Motivation Theory on students' expectancies for success, beliefs about ability, usefulness, importance and interest for the mathematics subject. Research asserts that possessing mastery-learning- oriented motivation has a more positive impact on students' expectancies for success, beliefs about ability, usefulness, importance and interest for mathematics. This research applies a quantitative method of study. Quantitative data have been analysed using Wigfield and Eccles's Expectancy-Value Theory Achievement Questionnaire in order to assess student's expectancies for success, ability beliefs and subjective task values. In the case study of a private Suleyman Sah University, Turkey, the focus of the questionnaire has been derived from the central research question: How applications of Achievement Goal Theory affect students' expectancies for success, beliefs about ability, usefulness, importance and interest for mathematics? The questionnaire was given to 40 students who were selected randomly in mathematics class. Also, in order to identify students' goal orientation, Elliot's AGQ (Achievement Goal Questionnaire) was applied to those students. Their Achievement Goal motivation types were compared to their beliefs about ability, usefulness, importance and interest for mathematics. Based on the quantitative data analysis, it was concluded that students with mastery-learning goal orientation have more expectancies for success, for them mathematics is a more useful and important subject, and, most importantly, they show more interest for the subject. These are very important components to be persistent in the face of difficulties and obstacles on the way to achievement in teaching mathematics.

**Keywords:** Achievement Goal Motivation, expectancies for success, beliefs about ability, usefulness, importance, interest

### Introduction

Individuals with task-involved goals focus on mastering tasks and increasing their competence. Mastery goals are rooted in the desire to improve one's competence during a learning activity. This is associated with higher intrinsic motivation. We also know that it is more desirable for a long-term persistency and engagement. Intrinsic motivation occurs in the absence of external rewards or incentives and can, therefore, be a strong indicator that a learner is

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becoming more autonomous (Zimmerman, 2004). When students establish their own learning goals and find motivation from within to make progress toward those goals, they are more likely to persist through difficult learning tasks and often find the learning process more gratifying (Wolters, 2003). Therefore, establishing one's own learning goals is a crucial factor in order to become an autonomous learner and regulate learning activities (SRL= Self-Regulated Learning).

Mastery goals generally cultivate a self-based (or task-based) evaluation of one's competence. Mastery-learning goals focus students' attention on developing the competence, mastering the task to gain a broader and deeper knowledge with the task, to thoroughly understand what they learn, to be deeply engaged, to perform the task in order to reach competence. Individuals with a strong mastery goal orientation see effort as a means to success. It is important to indicate that students with strong mastery-learning orientations are more likely to be persistent in the face of difficulties and obstacles on their way to achievement. They tend to attribute failure situations and negative feedback as valuable information on how to improve and they treat these failures as a learning experience, not as a sign of insufficient ability (Dweck & Leggett, 1988). Mastery-learning-oriented students are less threatened by failure, because their sense of satisfaction with the work is not influenced by external reasons (Nicholls, 1990). In the mind of mastery-learning-oriented students, effort is a more important factor than ability on the way of success.

Bandura's (1994) self-efficacy theory is a social-cognitive theory which focuses on expectancies for success and provides us with several important concepts that are necessary for understanding students' motivation for the task and achievement behaviours. Perceived self-efficacy is defined by him as learner's self-constructed judgments about their capabilities to produce designated levels of effort, to execute certain behaviours, an outcome or to achieve certain goals. Therefore, they experience relatively low test anxiety and relatively good test performance. From all these points of view it is reasonable to say that mastery learning goals promote learners' self-efficacy beliefs more effectively than performance approach and performance-avoidance goals, as performance-approach goal-oriented students have desire to outperform their classmates, maximize favorable evaluations of their competence /or minimize negative evaluations of competence and demonstrate their ability to lecturers, family, peers, etc. As for the performance-avoidance goal-oriented students, their main concern is to avoid the possibility of performing poorly and of being considered as not smart.

## Literature Review

Self-efficacy beliefs have an important effect on determining how people feel, think, set their achievement goals, motivate themselves and behave over events most effectively in the face of challenging tasks. This means that in this theory self-efficacy impacts human functioning through four major psychological processes: cognitive (how people think), motivational (how people motivate themselves), affective (how people feel) and selective (how

people set their achievement goals and behave) processes (Bandura, 1994). Learners are more likely to initiate actions, expend effort and persist in the face of difficulties and activities for which they have high self-efficacy. Although individuals' efficacy expectations are the major determinants of goal setting, activity choice, willingness to expend effort, and persistence, self-efficacy has been accepted as an essential component for successful learning (Zimmerman, 2000). Therefore, we can argue that mastery-learning and self-efficacy by feeding each other can improve low and middle performing learners' academic achievement in mathematics. The higher mastery-learning and self-efficacy, the more increased demands of rising effort and performance.

Bandura (1994) indicates that there are two kinds of expectancy beliefs: efficacy beliefs and outcome expectations. Learners' high outcome expectations and efficacy beliefs to be motivated are very essential components in order to be successful.

**Efficacy expectations** are beliefs about whether one can effectively perform the behaviours necessary to produce the outcome (e.g., "I can practice sufficiently hard to get a higher mark in the exam"). The two kinds of expectancy beliefs are different, because individuals can believe that a certain behaviour will produce a certain outcome (outcome expectation), but may not believe they can perform the behaviour (efficacy expectation). "Unless people believe they can produce desired outcomes by their actions, they have little incentive to act or to persevere in the face of difficulties" (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001, p. 187). Bandura proposed that individuals' efficacy expectations are the major determinants of goal setting, activity choice, willingness to expend effort, and persistence.

**Outcome expectations** are beliefs that certain behaviours, like doing practice, will lead to certain outcomes (e.g., I believe that if I can study sufficiently hard, I can increase my success).

Learners with high efficacy and outcome expectations are motivated, as they are confident about school tasks and persist when the tasks are difficult. Therefore, they are more willing to put in effort and improve academic skills. In contrast, learners with low efficacy and outcome expectations are not motivated to learn, as they are easily discouraged by failure. Additionally, understanding what experiences shape self-efficacy beliefs is essential for teachers who want to enhance students' intrinsic motivation to learn by increasing students' self-efficacy. How can students gain their sense of self-efficacy?

According to Bandura (1994), people's beliefs about their capabilities can be shaped and developed by four main sources of influence.

1. Mastery experiences
2. Social experiences provided by social models
3. Social persuasion
4. Moods (emotional states)

Individuals use these four sources of information to judge their capability to complete future tasks. Teachers who use these strategies in various ways and capitalize on the influence of the strongest of these sources can boost their students' sense of self-efficacy and produce more confident beliefs. Let us view each of these sources and how they affect people's beliefs about their capabilities.

### **Mastery experiences**

According to Bandura (1994), this is the most effective way of creating a strong sense of efficacy. Learners' past performance and mastery experiences improve a strong belief in their personal efficacy. If students have been successful at a particular task in the past, they probably will believe that they will be successful in the future (Bandura, 1993).

Mastery and performance orientation show a specific distinction in terms of mastery experiences. For instance, learners with performance goals have a belief that competence is a stable characteristic and competent students needn't try hard. Thus, they interpret their failure situation as due to the lack of ability. Their failures undermine their sense of self-efficacy beliefs and they can give up easily. Especially, if failures occur before the sense of efficacy is tightly established. However, mastery-goal-oriented student believe that success depends on effort, not ability, and they are sure that their chances of success will improve over time through practise and effort.

### **Social experiences provided by social models (=vicarious experiences of observing the performances of others)**

Social factors also play a role in the development of self-efficacy. Observing the performance of others, especially peers, being successful at a task or an activity can strengthen learner's beliefs and enhance their own self-efficacy for the activity (e.g. if someone can, why cannot I?).

In some contexts, there are inconsistencies with regard to how modelling relates to perceived self-efficacy. Seeing performance of people who, like the student, succeed by sustained effort, raises his/her beliefs and can help to develop self-efficacy. On the other hand, observing others' fail despite high effort, lowers students' efficacy and undermines their efforts (Schunk & Hanson, 1985). Thus, they will start to have doubts whether it is possible to succeed via effort. If students perceive that the model is very different from themselves (e.g., more talented), the student will not be considerably influenced by the model's behaviour and action (Zimmerman, 2000). Schunk and Hanson (1985) found that children who observed a peer model learn to solve a mathematical problem developed a higher self-efficacy for learning than did children who observed a teacher model the same problem.

However, people seek expert and skilful models who hold the competencies which they desire to have. Through their behaviour and expressed ways of thinking, a competent model can influence the student's behaviour, thinking, the way to transform knowledge and the strategies used for establishing and managing environmental demands.

Learning from a more capable, competent model such as a master teacher can raise self-efficacy beliefs (Bandura, 1994).

Whatever the idea, teachers should avoid to compare student's performance or competencies against another student or to the rest of the class. Instead, they should compare the goals that they set for their performance. According to Bandura (1994, p. 72), "modelling influences do more than provide a social standard against which to judge one's own capabilities".

### **Verbal persuasion**

Verbal persuasion is a third way of increasing students' beliefs about their capabilities that lead people to try hard enough to succeed. Teachers and parents can modify their constant, credible communication and feedback to guide the student through the task or encourage them to make their best effort and all these can boost students' self-efficacy. People who are persuaded verbally by their teachers, parents or peers that they possess the capabilities to master given activities are likely to mobilize a greater effort (Bandura, 1994). Students always need help to understand that they do not fail because they are incompetent, they fail because they did not make enough effort. A student who has been persuaded that he/she lacks capabilities tends to avoid challenging activities and gives up quickly in the face of difficulties. Such students only need consistent, credible and specific encouragement, e.g. "your effort is the most important factor for your success. If you do your best, such as following instructions, spending enough time on the task, or follow through on the learning strategy and plan, you will be successful." So, they will measure success in terms of self-improvement rather than outperforming others.

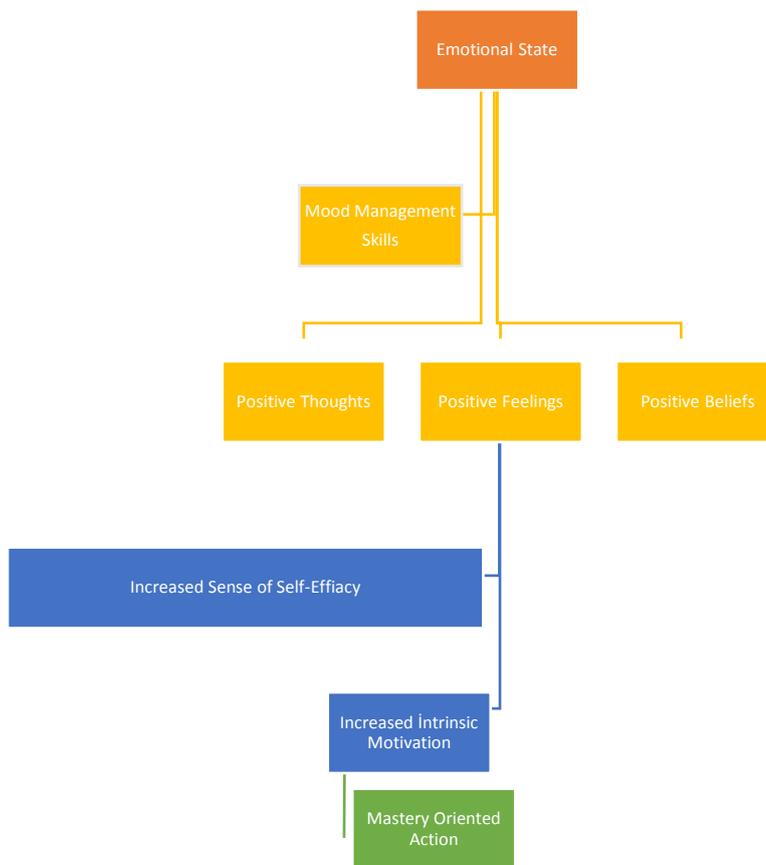
### **Moods (emotional states)**

Psychological state is also called affective arousal that refers to people's judgment concerning their emotional state (Smith, 2002; Wood & Bandura, 1989).

Emotions can disrupt thinking and learning. Our current mood influences the way we think, perceive events, remember and make decisions. A positive mood can boost one's beliefs in self-efficacy, while anxiety can undermine it. Being optimistic can create an energizing feeling that can contribute to strong performances as well as make us think more positively, be more creative, see and remember neutral events as positive. When we are happy, we have a "clear mind", but when we are upset, we cannot "think straight".

It is found that positive emotions in teachers also can increase teacher well-being and also the students' level of adjustment (Birch & Ladd, 1996). Teachers can help by reducing stressful situations and lowering the anxiety caused by the surrounding events like exams or presentations (Bandura, 1994). The role of an effective teacher is to teach how student can regulate his emotions correctly and to try to affect students' thoughts and beliefs positively so

that students will believe they are actually smart. When it is time to take a test, these students will be more confident that they will do well if they study for the test. Providing positive thoughts through emotional skills increases students' sense of self-efficacy beliefs. Thus, they will be more motivated to study toward their aim of passing the test. In terms of self-efficacy, these findings of studies are essential in teaching and fostering motivated and successful learners in the classroom. It seems clear that emotions can have a great effect on self-efficacy as well as learning and help or hinder the development of a child and their performance and success in school.



**Figure 1. The impact of Learners' Emotional State on Their Behaviour (made up by the researcher)**

According to Figure 1, it can be reasonably said that emotional states can have important effects on self-efficacy as well as on regulated learning when it is supported with mood management skills, because, as mentioned before, emotions can have a great effect on learning and help or hinder the development of children and their performance and success in school. Positive emotions such as joy, contentment, acceptance, trust and satisfaction, enhance students' sense of self-efficacy. All these emotions are strongly associated with mastery learning. However, extended emotional distress (e.g. anxiety/worry, sadness, tension, frustration, etc.) can lead to a lower sense of

personal efficacy (Wigfield & Eccles, 2002) and hamper students' ability to learn. Strengthening positive thoughts through emotional skills increases students' motivation to study, and pulls them toward their goals of perform the task successfully. These findings of studies are essential to the approach in this study in teaching and fostering self-motivated and successful learners in the mathematics classroom.

### **Research Question**

Based on the previous theoretical literature on mastery-learning goal orientation and self-efficacy, the following research question guided this study:

How applications of Achievement Goal Theory affect students' expectancies for success, beliefs about ability, usefulness, importance and interest for mathematics?

### **Research Methods**

This research applies a quantitative method of study. Quantitative data have been analysed, using Wigfield and Eccles's Expectancy-Value Theory Achievement Questionnaire in order to assess students' expectancies for success, ability beliefs and subjective task values. Also, in order to identify students' goal orientation, Elliot's AGQ (Achievement Goal Questionnaire) was filled out by the students at the same time. Their achievement goal motivation types were compared to their beliefs about ability, usefulness, importance and interest for mathematics.

### **Participants**

40 first-year students of Suleyman Sah University (Turkey) were given Elliot's AGQ (Achievement Goal Questionnaire) and Wigfield and Eccles's Expectancy-Value Theory Achievement Questionnaire. They were selected randomly from the volunteers in mathematics class.

### **Measures**

Wigfield and Eccles's Expectancy-Value Theory Achievement Questionnaire was given to randomly selected students in order to assess students' expectancies for success, ability beliefs and subjective task values. Also, to identify students' goal adaption types, a questionnaire with eighteen items from the Achievement Goal Orientation Inventory (Elliot & Church, 1997) was given to randomly selected students. Their course exam results were also compared with their motivational types. For each questionnaire, students were asked to rate the suggested statements using a 5-point Likert scale.

## Results

Table 1 presents the results of the research, namely, how the goals that the students set up are correlated to ability beliefs, expectancy for success and the perception of usefulness of the subject (mathematics). They have been gathered by using both questionnaires: Wigfield and Eccles's Expectancy-Value Theory Achievement Questionnaire (in order to assess student's expectancies for success, ability beliefs and subjective task values) and Elliot's AGQ (Achievement Goal Questionnaire; in order to identify students' goal orientation). Quantitative data have been analysed by using SPSS software program and to find out the correlations between motivational variables Pearson Correlation Coefficient (PCC) has been used.

	Ability Beliefs (r)	Expectancy for success (r)	Usefulness, Importance, Interest (r)
Mastery Goals	0.234	0.413	0.338
Performance-Approach Goals	0.279	0.323	0.271
Performance-Avoidance Goals	0.042	-0.274	-0.186

**Table 1: Correlations between students' achievement goal orientations and their ability beliefs, expectancy for success, usefulness, importance, and interest Items**

It is possible to see that the correlation of mastery goals & expectancy for success ( $r=0.413$ ;  $0 \leq r \leq +1$ ) and mastery-learning & usefulness, importance, and interest ( $r=0.338$ ;  $0 \leq r \leq +1$ ) set to some degree higher correlations compared to the students who have performance-approach ( $r=0.323$ ;  $0 \leq r \leq +1$  and  $r=0.271$ ,  $0 \leq r \leq +1$ ). Anyway, the correlations for mastery goals and performance-approach goals are both positive, while for mastery goals they are higher. For performance-avoidance goals, these correlations are negative ( $r=-0.274$ ;  $-1 \leq r \leq 0$  and  $r=-0.186$ ;  $-1 \leq r \leq 0$ ).

On the other hand, the value of  $r=0.279$  ( $0 \leq r \leq +1$ ) for the correlation of performance- approach goals & ability beliefs demonstrate the strongest positive correlation than for mastery goal orientation. For mastery goals the correlation is lower ( $r=0.234$ ;  $0 \leq r \leq +1$ ), while for performance-avoidance it is the lowest, close to zero ( $r=0.042$ ,  $0 \leq r \leq +1$ ). This is easy to explain, as they do not believe they have abilities to learn mathematics).

Table 2 presents the results of the research, namely the correlations between all variables mentioned above. Results represents the all (MG-oriented, PAG-oriented and PAVG- oriented) students' answers' correlations between expectancy for success & usefulness, importance, and interest; expectancy for success & ability beliefs; students' ability beliefs & usefulness, importance, and interest. Without separating students according to their goal adaption type, we reached the general idea that usefulness, importance, and interest constructs, expectancy for success have a higher correlation than ability beliefs for all learners.

Values	Correlations (r)
Expectancy for success & ability beliefs	0.596
Expectancy for success & usefulness, importance, and interest	0.429
Ability beliefs & usefulness, importance, and interest	0.178

**Table 2: Correlations between students' expectancy for success & usefulness and importance, interest, expectancy for success & ability beliefs and students' ability beliefs & usefulness, importance, and interest.**

According to the results in table 2, we can indicate that there is a strong positive correlation between expectancy for success & ability beliefs ( $r = 0.429$ ) and expectancy for success & usefulness, importance, and interest ( $r = 0.596$ ). These results are quite high and show a strong positive relationship between these two variables. On the other hand, the correlation of ability beliefs & usefulness, importance, and interest ( $r=0.178$ ) is a very weak correlation because of closeness of the value of  $r$  to 0.

## Discussion

The obtained results are in agreement with the theories discussed in the literature review. High expectation is an optimistic belief that arouses students' positive feelings to be successful in mathematics. With this belief they will be aware of the opportunities to help them to be successful and to reach high standards. Even if they fail, they tend to attribute this failure situation and negative feedback as valuable information on how to improve. For those students these failures are learning experiences, not the signs of their incompetency. Without frustration they try to master new mathematical skill and enhance learning outcomes continuously. Therefore, mastery-learning goal orientation is a perfect fit for mathematics instruction. Additionally, motivation theorists always try to explain how motivation influences choice, persistence, and performance. Some of them (Wigfield, 1994; Wigfield & Eccles, 2000; 2002) argue that individuals' task choice, persistence, and performance can be explained by their beliefs about how well they will perform the activity (expectancy belief) and value the activity (usefulness, importance and interest). Based on this, it is reasonable to say that in goal orientation the most effective one is the most influential one over those motivational variables which is mastery-learning goal orientation.

On the other hand, the correlation between performance-avoidance goal orientation & ability beliefs is very weak. Also, the correlation between expectancies for success, usefulness, importance and interest for the subject & performance-avoidance goals is negative, as expected based on literature analysis.

## Conclusion

In accordance with the findings three fundamental conclusions emerged from our research:

1. Mastery goal orientation most effectively promotes students' expectancies for success. However, performance-approach goals also yield relatively high expectancy for success. Only performance-avoidance goals are in fact not correlated with students' expectancies for success.
2. Students with mastery-learning goal orientation have a higher belief that mathematics is a useful and important subject, and most importantly they show more interest for the subject. These are very important components to be persistent in the face of difficulties and obstacles on the way to achievement. Especially students' subjective task values (usefulness and importance) are the strongest predictors of students to be persistent. Performance-approach goals yield lower, but positive expectancy for success. Only performance-avoidance goals are negatively correlated with students' expectancies for success.
3. While the relation of expectancy for success & ability beliefs and expectancy for success & usefulness, importance, and interest has a strong positive relation, the correlation between ability beliefs & usefulness, importance, and interest is very weak.
4. Mastery goals are the most useful for students, performance-approach goals can yield positive results, but are less efficient, while performance-avoidance goals are harmful for students' knowledge.

### **Significance**

The significance of this research is that it should provide understanding that learners with mastery goal orientations may create a strong sense of efficacy which inspires the main belief that ability develops over time through practice and effort.

### **Limitations**

Although this research was carefully prepared and reached its aim, it has certain limitations. First of all, because of the time limit, this research was conducted only on a small size of population in a single university with 40 students. Therefore, generalization and the validity of the findings to university students at other institutions is limited. It is expected that the limitations with this study may be addressed through replications and additional larger-scale investigations.

### **Suggestions**

This finding suggests that in order to improve students' mathematical achievement in school, educators should focus on enhancing students' academic self-efficacy beliefs through mastery goal orientation.

Achievement motivation researchers should investigate the changes in students' goal orientation types, ability beliefs, expectancies for success, and subjective values, as well as the relations between them during the education years, in order to give more valid explanation for learners' performance, choice of achievement tasks, persistence on those tasks.

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## Appendix

### Data collection questions

First questionnaire: Wigfield and Eccles's Expectancy-Value Theory of Achievement Motivation Items to Assess Children's Ability Beliefs and Subjective Task Values

#### Ability Beliefs Items

##### 1. How good in math are you?

1. Very poor   2. Poor   3. Fair   4. Good   5. Very good

##### 2. If you were to list all the students in your class from the worst to the best in math, where would you put yourself?

1. One of the worst   2. Below average   3. Average   4. Above average   5. One of the best

##### 3. Some kids are better in one subject than in another. For example, you might be better in mathematics than in reading. Compared to most of your other school subjects, how good are you in mathematics?

1. Much lower in mathematics than in other subjects
2. Slightly lower in mathematics than in other subjects
3. About the same in mathematics and in other subjects
4. Higher in mathematics than in other subjects
5. Much higher in mathematics than in other subjects

#### Expectancy Items

##### 4. How well do you expect to do in mathematics this year?

1. Not at all well   2. Slightly well   3. At average level   4. Well   5. Very well

##### 5. How good would you be at learning something new in mathematics?

1. Very poor   2. Poor   3. Fair   4. Good   5. Very good

**Usefulness, Importance, and Interest Items****1. Some things that you learn in school help you do things better outside of class, that is, they are useful.**

**For example, learning about plants might help you grow a garden. In general, how useful is what you learn in mathematics?**

1. Not at all useful      2. Slightly useful      3. Moderately useful      4. Useful      5. Very useful

**2. Compared to most of your other activities, how useful is what you learn in mathematics?**

1. Not at all useful      2. Slightly useful      3. Moderately useful      4. Useful      5. Very useful

**3. For me, being good in mathematics is ..... complete the sentence with the one of the followings.**

1. Not at all important      2. Of little importance      3. Moderately important      4. important      5. Very important

**4. Compared to most of your other activities, how important is it for you to be good at mathematics?**

1. Not at all important      2. Of little importance      3. Moderately important      4. important      5. Very important

**5. In general, I find working on mathematics assignments**

1. Very boring      2. Moderately boring      3. Slightly interesting      4. Interesting      5. Very interesting (fun)

**6. How much do you like learning mathematics?**

1. Not at all      2. Little      3. Somewhat      4. Much      5. Very much

**Second questionnaire: Elliot's AGQ Achievement Goal Questionnaire**

Circle 1 to communicate "Strongly Disagree"

Circle 2 to communicate "Disagree"

Circle 3 to communicate "Neither agree nor disagree"

Circle 4 to communicate "Agree"

Circle 5 to communicate "Strongly Agree"

1 2 3 4 5      1. It is important for me to do better than the other students.

1 2 3 4 5      2. I often think to myself, "What if I do badly in this class?"

1 2 3 4 5      3. I want to learn as much as possible from this class.

1 2 3 4 5      4. In a class like this, I prefer course materials that really challenge me, so I can learn new things.



- 1 2 3 4 5 5. I worry about the possibility of getting a bad grade in this class.
- 1 2 3 4 5 6. My fear of performing poorly in this class is often what motivates me.
- 1 2 3 4 5 7. My goal in this class is to get a better grade than most of the students.
- 1 2 3 4 5 8. In a class like this, I prefer course materials that arouse my curiosity, even if it is difficult to learn.
- 1 2 3 4 5 9. I just want to avoid doing poorly in this class.
- 1 2 3 4 5 10. I'm afraid that if I ask my instructor a "dumb" question, he or she might not think I'm very smart.
- 1 2 3 4 5 11. I am motivated by the thought of outperforming my peers.
- 1 2 3 4 5 12. I desire to completely master the material presented in this class.
- 1 2 3 4 5 13. It is important for me to do well compared to others in the class.
- 1 2 3 4 5 14. I hope to have gained a broader and deeper knowledge when I am done with this class.
- 1 2 3 4 5 15. I want to do well in this class to show my ability to my family, friends, advisors, or others.
- 1 2 3 4 5 16. My goal for this class is to avoid performing poorly.
- 1 2 3 4 5 17. I am striving to demonstrate my ability relative to others in this class.
- 1 2 3 4 5 18. It is important for me to understand the content of this course as thoroughly as possible.

**Scoring Key**

**Performance: Approach Goals**

Add up the numbers from the following six items and divide by six: 1, 7, 11, 13, 15, 17

Performance: Avoidance Goals

Add up the numbers from the following six items and divide by six: 2, 5, 6, 9, 10, 16

**Mastery Goals**

Add up the numbers from the following six items and divide by six: 3, 4, 8, 12, 14, 18