Order Number 9429626

Academic achievement motivation in college students: The effect of grade information on motivation

Kirk-Kuwaye, Michael R., Ph.D.

University of Hawaii, 1994

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

ACADEMIC ACHIEVEMENT MOTIVATION IN COLLEGE STUDENTS:

THE EFFECT OF GRADE INFORMATION ON MOTIVATION

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

EDUCATIONAL PSYCHOLOGY

MAY 1994

BY

Michael R. Kirk-Kuwaye

Dissertation Committee

Frederick T. Bail, Chairperson
Joanne E. Cooper
Marie K. Iding
Karen Louise Jolly
David M. Sherrill
Shuqiang Zhang

ACKNOWLEDGMENTS

I am grateful to the many individuals who supported me while I was completing this dissertation.

To Fred Bail, who never let up asking the tough questions; Joanne Cooper, Marie Iding, Karen Jolly, David Sherrill, and Shuqiang Zhang, who provided insightful comments and encouragement; and Betsy Brandt, who on short notice contributed much.

To Chuck Gee, dean of the School of Travel Industry Management, and Richard Dubanoski, chair of the Arts and Sciences Council of Deans, who provided funds and resources.

To Ginger Carey, and the other consultants at the University of Hawai'i Computing Center, who with great patience and skill raised my SAS awareness.

To Iris Miyamura at Educational Psychology, who assisted with many of my unique memos and forms.

To Ruth Streveler and Bill Burke, who shared their expertise and wit, which made the hard parts bearable.

To parents Henry and Nora Kuwaye and mother-in-law Connie Neitz, who were there during the home stretch, and son Greg and stepdaughter Rachael, who helped with the stapling and kept things in perspective.

To my wife Chris, who believed I could do it all along and let me use the room that was her own.

ABSTRACT

The effect of mid-term grade information on the self-reported motivation patterns of college students is examined in this study. Seven-hundred twenty-five college students in four introductory courses, representing a cross section of disciplines, were administered the Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ scales used were those purporting to measure intrinsic goal orientation, extrinsic goal orientation, task (course) value, control of learning beliefs, and self-efficacy. The MSLQ was administered three times: (a) at the beginning of the semester, (b) just prior to the first examination or project of the semester, and (c) shortly after the examination or project grades were made available to the students. Of the 725 students who were administered the questionnaire, 227 students provided an identification number at each of the three administrations and were the study's sample (n = 227).

It was found that (a) there was a general decline in motivation across dimensions before grade information was received; (b) the students who received low grades and grades below and above what they had expected accounted for most of the pre- to post-grade information decline in intrinsic goal orientation, self-efficacy and task value; and, (c) three motivation dimensions were situation-specific, which other research have found to be strongly

related to deeper processing learning strategies and to final grade. It was also found that younger students and students who were first in their family to attend a university were more likely to show a decline in their control of learning beliefs levels than other students. These findings are significant because they add empirical evidence to the expectancy-value motivation model and help reveal to instructors and learning assistance specialists the relationships between examination or project grade information and student motivation.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

In the past decade, a leading thrust in achievement motivation research has been the study of how the classroom environment influences the motivational aspects of student learning (Ames, 1992b; Blumenfeld, 1992; Corno & Rohrkemper, 1985; Pintrich, 1989). Central elements of the classroom environment are tasks, evaluation, and teacher authority (Ames, 1992b). However, there are several shortcomings in this body of research. These include (a) the relationship of classroom structure and a single motivation dimension (e.g., student control of learning beliefs), rather than the whole motivational system of the individual; (b) the use of primary and secondary (K-12) student populations rather than the post-secondary, college population; and, (c) the measuring of motivation at a single point in time.

While developing a unifying motivation theory is complicated, researchers see that motivation dimensions are inextricably linked and studies should focus on human motivation as a "system" (Ford, 1992). For the college population, some studies have focused on examining the multi-dimensional aspects of motivation. Stark, Lowther, Ryan, Bomotti, Genthon, Martens, and Haven (1988) examined the relationship between motivation dimensions and field, college type and class format. Generalizations from the

study are limited, however, by the small sample sizes. Pintrich (1989) developed a model of motivation and cognition that encompasses both the value and expectancy dimensions of motivation and a reliable measure of these dimensions. Pintrich focused mainly on model development, ascertaining the relationship between student motivation dimensions, cognitive and metacognitive strategies and achievement rather than the effect of a classroom structure on motivation dimensions.

Part of the reason for the relative dearth of motivation research on college populations, as compared to that of K-12 populations (Ames, 1992a; Clifford, 1991; Csikszentmihalyi & Nakamura, 1985; Deci, Schwartz, Sheinman, & Ryan, 1981), may be that researchers view learning in college as occurring primarily outside of the classroom (Pintrich, 1989), making the study of classroom structures relatively inconsequential. In addition, students in college may be seen as a self-selected population, favoring the more academically persistent and capable, and therefore perhaps as having more fixed motivation levels.

However, it may be misleading to assume that classroom structures are relatively unimportant to college student motivation. One of the most salient structures in classrooms is evaluation and reward through examination and project grades (Ames, 1989b; Pintrich, 1989). These may have a strong influence on various motivation dimensions, such as

the effect grading based on class or other group norms has on the student perception of ability.

In addition, college students, while a self-selected group, do suffer from problems of engagement in courses and the curriculum, especially in the first year of college when the dropout rate is highest (Astin, 1991). First-year students are also most likely to enroll in large introductory courses, in which instructor access and control of learning, due to prescribed assignments, may be limited. The college student population also is becoming more diverse, consisting of increasingly older, returning students as well as those from culturally different groups. Consequently, the diverse backgrounds and experiences, both academic and personal, of these students contribute to the variation in motivation cognition and behavior of the college population.

Blumenfeld (1992) calls for more examination of goal theory processes over time, specifically asking, "During a semester or year, at what point are classroom perceptions crystallized and when do they have maximum impact on strategy use?" (p. 275). Deci et al. (1981), in a study of primary school students, found that student perceptions of the classroom, and the type of motivation they elicited, were formed during the first five weeks of class and thereafter remained stable. Pintrich (1989) examined the correlation between motivation dimensions and achievement

measures, such as exam and lab grades; however, shifts in the motivation dimension measures caused by the grade information feedback were not examined.

STATEMENT OF THE PROBLEM

A wider view of motivation was taken in this study in which the effects of classroom structure on motivation on a multi- versus uni-dimensional level was examined and Pintrich's (1989) motivation model and measurement instrument were used. Whereas research into the effect of classroom structure on motivation has been done extensively on the K-12 population, this study's population was college students, primarily first-year students and students new to the university experience, who are at greatest risk of dropping out. The classroom structure used was evaluation in the form of grade information on mid-term examinations and projects because of the presumed significant effect it may have on the motivation dimensions of college students. The shifting levels in motivation dimensions were also examined in this study, from (a) the beginning of class to prior to the first examination or project completion date, and (b) the beginning of class to after the examination or project when grades were made available to the students.

The expectancy-value model developed by Pintrich (1989) defines the value component of motivation as those

motivation dimensions that pertain to an individual's reason for engaging in a task, such as learning for mastery or because the task is interesting. The expectancy component of motivation consists of those motivation dimensions that pertain to an individual's belief in being able to do the task, such as belief in self-efficacy or effort leading to success. While Pintrich and Schrauben (1992) suggest that the motivation dimensions of the value component are more global and stable, and the dimensions of the expectancy component are more situation-specific and less stable, this study's hypotheses predicted that (a) intrinsic goal orientation, which is a value dimension, will show situational fluctuations and change with grade information; and (b) control of learning beliefs, which is an expectancy dimension, will show no situational fluctuations and change with grade information.

In addition, during the first questionnaire administration, student demographic information was solicited. While not a focal point of this study, changes in motivation dimensions were correlated to certain student characteristics in order to discern any pattern that would influence the change in motivation. It was hypothesized that being new to the university, which was measured by age and whether the student was the first in the family to attend a university, would affect the student's change in pre- and post-grade information motivation levels.

To provide background for this study, relevant research areas related to the research questions are reviewed in Chapter II: the classroom environment and its influence on student motivation, motivation models, grade information and motivation, college student characteristics, and instruments that measure motivation dimensions. In addition, the hypotheses to be tested are presented in Chapter II.

The methodology used to answer the research questions is discussed in Chapter III. In Chapter III, the participants, questionnaire, and data collection procedures, and the method of analyzing the data are described.

The results of the study are described in Chapter IV, then discussed in Chapter V. The limitations of the study, recommendations for future research, and implications for the field of education are also discussed in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

In this chapter, literature related to the study is discussed. The review of the literature is focused on five areas: (a) classroom environment and motivation, (b) motivation models, (c) grade information and motivation, (d) college student characteristics and motivation, and (e) the measurement of motivation.

CLASSROOM ENVIRONMENT AND MOTIVATION

From the 1930s through the 1950s, motivation research focused on what moved an organism from a resting state to one of activity. Hull (1952) and Spence (1958) held the view that what propelled an organism to activity was the desire to satiate various need states and drives in an environment of limited resources. Motivation was seen as separate from learning, in part due to Tolman's (1932) landmark study of latent learning, in which he demonstrated that learning could take place without reward or drive reduction. The role of motivation was considered only tangential to the learning process in that its effect was limited to how an organism applied what it knew rather than in learning something new.

However, in the 1960s and 1970s a major shift occurred in the conception of motivation. Spurred by the change in

psychology from a mechanistic, behavioral approach to a more cognitive approach, motivation researchers began to examine the individual's interpretation of the environment. Atkinson (1957), in his approach-avoidance formula for mediating behavior, included the individual's judgment of his or her probability of success and the incentive value of the task. Rotter (1954) focused on the individual's belief about his or her control over success and failure, whether reward came from an external source or from the self. Weiner (1985) elaborated further on the individual's beliefs about causality, looking not only at locus of control but also at whether the causal attribution source was stable or unstable. Bandura (1982) studied an individual's self-efficacy as contingent on accomplishing tasks perceived as difficult and improving in performance.

In addition, individual differences in motivation became an important variable in motivation theory, resulting in practical applications for underachievers in the classroom. Atkinson (1964) showed that when a group of individuals is given instruction or experience that increases achievement concerns about failure, this group will have achievement strivings greater than others who have not had past achievement failure concerns. The different causal ascriptions, whether success was attributed to an internal, controllable cause such as effort or to an

external, uncontrollable cause such as luck, were highly individualistic (Weiner, 1985).

While these early studies were done under experimental laboratory conditions, they showed that individuals enter situations with different motivational beliefs and thinking, and that they react differently to the achievement cues in the environment. This laid the groundwork for educational psychologists to research motivation in the natural setting of the classroom, relating specific structures in the classroom environment to a motivation dimension, or group of dimensions. Weiner (1990), in his review of the motivation literature, noted the emergence of environmental determinants as a new category in motivation research.

Researchers conceptualize the classroom environment that influences student motivation in different ways. However, the primary classroom environmental structures in regards to academic achievement motivation are task, evaluation and recognition, authority, assistance, and social context (Ames, 1992b; Stipek, 1993).

Classroom tasks and activities are central to the learning process, influencing how students approach learning and use their time (Ames, 1992b). Also, classroom tasks and activities are important ways in which the curriculum is conveyed to students (Pintrich, 1989). Marshall and Weinstein (1984) note that how the teacher sets up the task, whether students must all work on the same task in the same

way and the sequence of steps, determines the extent to which students compare themselves to each other and become involved in learning. Tasks that are diverse, that require divergent processes for task completion, and that are not locked into a single sequence encourage more task-involved intrinsic interest because ability comparison is limited.

How evaluation is structured in the classroom can orient students to different learning goals. Ames and Ames (1984) noted that a competitive goal structure, in which students were evaluated relative to others in the class, (e.g, class "curve") led to ability attributions that could be negative following any failure experience. However, in a cooperative structure, in which performance is judged as a group, or in an individualistic structure, in which performance is judged against the student's own past performance, the student attributes performance outcomes to his or her own effort. With effort attribution, a student would tend to persist in spite of failure. Extrinsic rewards are commonly used in the classroom and have both positive and negative effects on motivation. Rewards that are used without regard for varying ability levels and interests of students (Lepper & Hodell, 1989) or are perceived by the students as bribes or as having no relevance to the required behavior can actually undermine any intrinsic interest in the task that a student may have (Deci & Ryan, 1985). However, rewards made contingent on effort or meaningful

progress can increase positive achievement striving (Brophy, 1987, 1983).

Teacher authority that is shared with students involves providing students with options and opportunities to participate in making decisions on assignments and other classroom activities. Shared authority has been shown to have positive effects on intrinsic motivation (de Charms, 1976). Student perception of control is increased when the teacher emphasizes independent thinking rather than teacher authority. Student autonomy will not result in increased intrinsic motivation, however, if the teacher does not support the student in selecting and planning the activities (Ryan, Connell, & Deci, 1985).

Studies of teacher assistance have taken place mainly at the primary school level and have focused on how "overhelping" can reduce the child's task persistence (Hamilton & Gordon, 1978; Stipek, 1993). However, Rohrkemper and Corno (1988) see the teacher's helping role as one of coaching and modeling positive, task-involved and self-involved inner speech, such as when the teacher works on a sample problem and talks through the difficult steps in solving the problem. Students were found to be less anxious and more persistent in the face of failure when they had internalized the teacher problem-solving self-talk. Self-efficacy and feeling in control of learning are outcomes of adopting inner speech that provides students with specific

task strategies as well as encouraging self-statements regarding the challenge.

The social context of class activities can be an important factor in contributing to positive motivation in the classroom. Children need to feel loved and have a sense of belonging in order for learning to proceed (Wlodkowski, 1986). Classroom norms, social and procedural systems, and criteria of performance should convey to the student that the class is a predictable and rational environment where learning can take place. Anderson, Stevens, Prawat, and Nickerson (1988) found, in their study of third and fourth graders, that tasks embedded in such an environment led to greater feelings of self-competence in academic domains, of control over success or failure, and of intrinsic value for independently performing school tasks.

MOTIVATION MODELS

The study of motivation in the past has been based on many influential models (e.g., psychoanalytic models [Erickson, 1950; Freud, 1957/1914]; humanistic models [Maslow, 1968; Rogers, 1961]; drive reduction models [Hull, 1952; Spence, 1958]). However, these models are primarily concerned with the social and personality development of the general population and are not specific to the cognitive-motivational development of students.

Tinto (1987) developed a model of college student persistence based on students' integration into the college culture. Students who become more involved in college activities are more likely to be engaged in and persist at their academic work. However, Tinto's model is focused more on the overall college experience rather than classroom achievement. In addition, his theory is being challenged on conceptual and empirical grounds in that integration into the college culture negatively affects those from culturally different groups (Tierney, 1992). Perry (1970) and Riegel (1975) also studied the college population, but their models built upon Piaget's stage theory, focusing on intellectual and ethical development, rather than on achievement motivation in a classroom context.

For the most part, motivation researchers have focused on specific aspects of theories to explain classroom phenomena rather than on comprehensive theories or generalizable models (Weiner, 1990). However, more contemporary researchers are calling for both an integration of different motivation theories (Ford, 1992; Weiner, 1990) and of motivation and cognition theories in general (Pintrich, Marx, & Boyle, 1993).

The cognitive motivational model developed and refined by Pintrich (McKeachie, Pintrich, Lin, & Smith, 1986; Pintrich, 1988a, 1988b, 1989; Pintrich & Garcia, 1992; Pintrich & Schrauben, 1992) addresses both of these concerns

as well as focusing on achievement motivation in the context of student learning. This model is a comprehensive motivation model that links the major cognitive motivation theories and was developed through both theoretical research and empirical studies in which data from large numbers of college students were collected using a reliable measurement instrument (viz., the Motivated Strategies for Learning Questionnaire [MSLQ], Pintrich, Smith, Garcia, & McKeachie, 1991).

This Pintrich model pulls together different cognitive motivation theories by using as a "template" the expectancy-value motivation model originally developed by Atkinson (1964), which measured the value one expected to gain and the mathematical probability of obtaining it. Atkinson's model has been reformulated to be less rigid and to take into account perceptions of task difficulty and ability to do the task (Dweck & Elliot, 1983; Eccles, 1983; Nicholls, 1984; Weiner, 1985). As shown in Figure 1, expectancy and value components can be seen as the two general paths for the motivation model (Pintrich, 1988a).

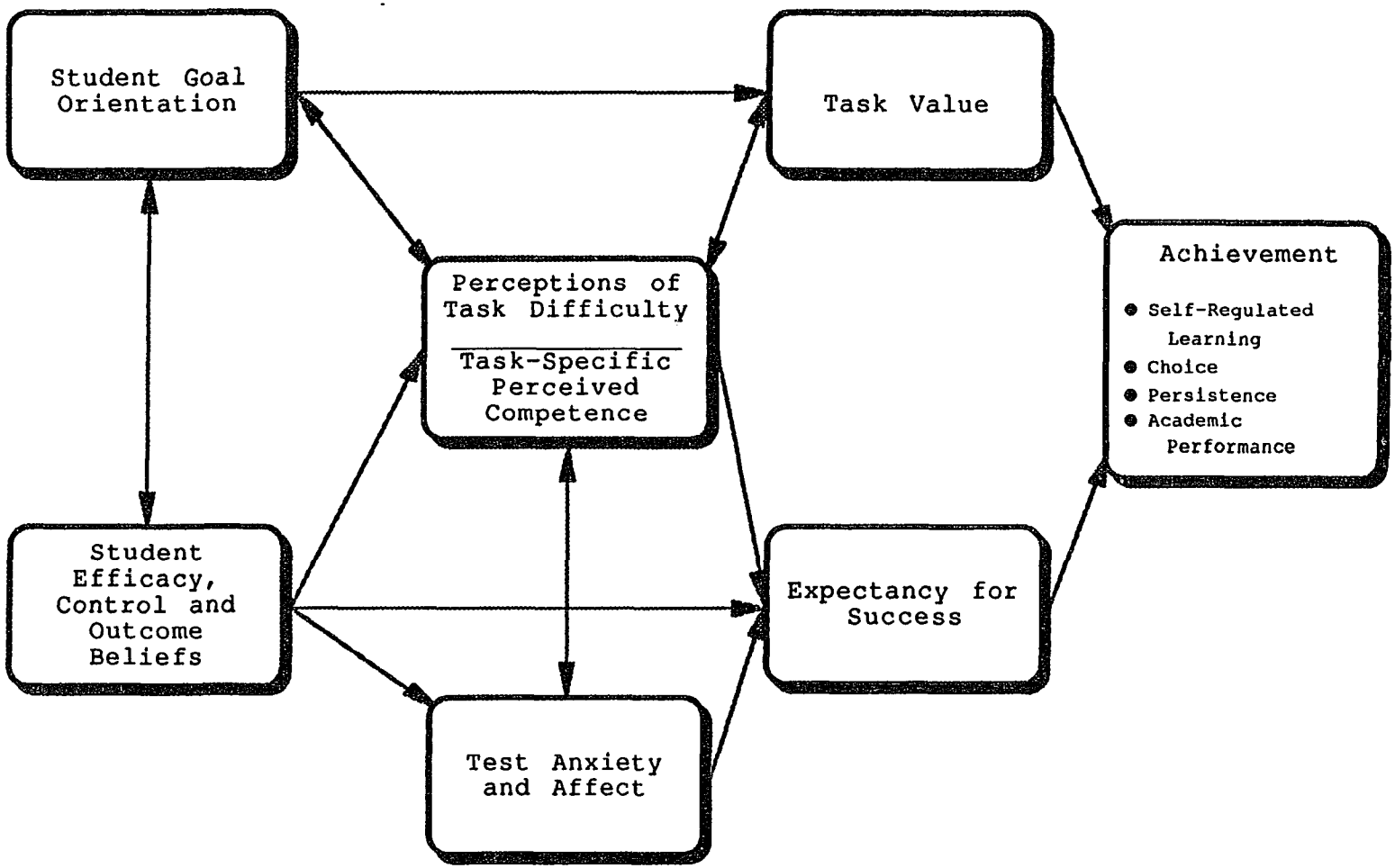


Figure 1. Expectancy-value motivation model.

The expectancy path, along the bottom of the figure, consists of student beliefs with regard to efficacy, control and outcome; perceived competencies; test anxiety; perceptions of task difficulty; and, expectancies for success. This path's final outcome is the student's belief about expectation for success, answering the question, "Can I do this task?" This model predicts that students with high expectancy for success will engage in more achievement related behavior, such as being involved in and persisting at a task, than students with lower expectancy for success.

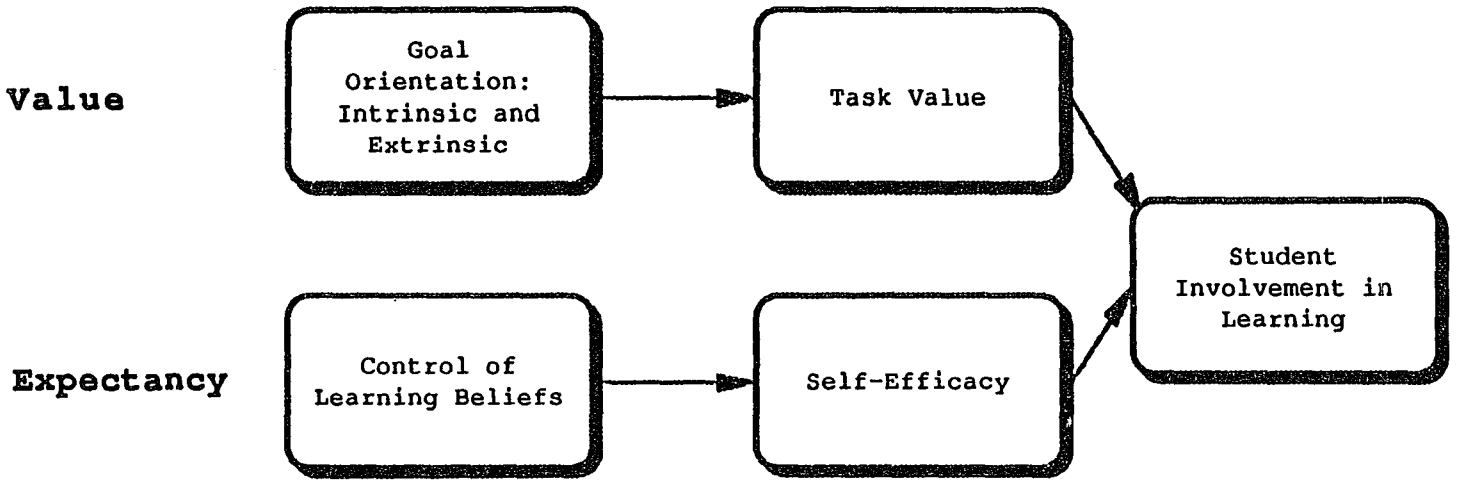
The value path in the model, at the top of the figure, consists of student goal orientation and task value. Although less researched than the expectancy path, the value path is important to student involvement in learning, and also interacts with the expectancy path dimensions (McKeachie et al., 1986). This path's final outcome includes the students' reasons for engaging in the task, having an intrinsic or extrinsic goal orientation, and beliefs about the importance, utility, or interest of the task. Students answer the question, "Why am I doing this task?" Achievement behavior such as student choice of activities and persistence at a task are related to the value path.

Pintrich (1989) further streamlined this model by reducing the expectancy path to three dimensions--control of learning beliefs, self-efficacy, and expectancy for success; and by having test anxiety define a new path level, called

the affective path. The expectancy path was further reduced by collapsing the expectancy for success dimension into the self-efficacy dimension, which makes this model's definition of self-efficacy broader than that of other models (Pintrich & Schrauben, 1992). The reasoning behind merging the expectancy for success and self-efficacy dimensions was that for college students, the belief in being able to learn and understand in a course is driven by their expectancy to do well. The two dimensions have been found to be highly correlated (Pintrich et al., 1991).

The most recent reformulation of the expectancy-value motivation model based on the research of Pintrich, Smith, Garcia, and McKeachie (1991) is shown in Figure 2.

PATH*



* The affective path (i.e., the test anxiety dimension) is not shown in this figure.

Figure 2. Reformulated expectancy-value motivation model.

This reformulated expectancy-value motivation model (hereafter called the "Pintrich" model) has been developed and extensively tested using the Motivated Strategies for Learning Questionnaire (Pintrich et al., 1991). In addition, the validity of each dimension is supported both empirically and theoretically.

Goal orientation is defined as the type of goal, purpose, or intention that an individual may adopt in an achievement situation. Pintrich drew from different goal theories in developing his model: intrinsic motivation as mastery and challenge (Harter, 1981a; Harter & Connell, 1984); learning versus performance goals (Dweck & Elliot, 1983; Harackiewicz & Sansone, 1991); task versus ego-involved orientation (Nicholls, 1988); and, motivation to preserve or increase self-worth (Covington, 1984). In all of these theories, a common, important distinction is made between intrinsic and extrinsic goal orientation (Pintrich & Schrauben, 1992). In the Pintrich model, students who have an intrinsic goal orientation approach tasks with a focus on learning and mastery, while those with an extrinsic goal orientation focus on performance, grades or pleasing others. While some researchers have viewed intrinsic and extrinsic motivation as one dimension, representing extremes on a continuum (Harter, 1981a), Pintrich (1989) viewed intrinsic and extrinsic goal orientation as being more independent of

each other. Students can approach learning both intrinsically and extrinsically at the same time.

Nicholls (1988) does make a distinction between ego-involved and extrinsic motivation. He views extrinsic motivation for learning as a means to an end, such as a token or grade. When a token is received, learning ends. With ego-involved learning, however, learning is a means to avoid "looking stupid" or "looking smarter" than others. An extrinsically motivated student is not focused on how he or she compares with others, but on the grade or token. However, both ego-involvement and extrinsic motivation are similar in that neither derive from an internal interest in the material or desire for self-improvement.

The type of goal orientation students may adopt is important because those students who adopt a more intrinsic goal orientation are found to be more cognitively engaged in a task than those who adopt an extrinsic goal orientation. Nicholls (1988) notes that for those who are task involved, learning is inherently valuable, meaningful, satisfying and attention is focused on the task and strategies needed to master the material rather than on the self. For students who are ego-involved, learning is a means to the end of appearing smart or avoiding appearing stupid, and attention is focused on the self.

While researchers generally hold that intrinsic or task-involved learning should be the focus of learning

(Ames, 1992b; Nicholls, 1988), Pintrich (1988a) argues that there is some benefit in having an extrinsic goal orientation. In his study of the MSLQ and college student achievement measures, Pintrich found that when intrinsic goal orientation is low, having a high extrinsic goal orientation can be beneficial in maintaining high achievement striving and performance.

Task value beliefs are those perceptions an individual may have about the importance of and the interest generated by the task at hand. Pintrich uses Eccles' (1983) definition of task value in developing this task value dimension in his model: the students' perception of the importance of the course or course material; the intrinsic interest in the course or course material; and, the utility value of the course or course material for future goals. While the type of goal orientation a particular student adopts influences the general direction of behavior, task value may influence the strength and intensity of that behavior. While Pintrich (1989) has found that college students do not differentiate between the importance, interest, and utility components of task value, these components may prove to be differentially important when examining college students whose career interests or family pressures are strong.

Self-efficacy is defined as an individual's belief about his or her capability to perform or achieve certain goals in a particular domain or in specific situations

(Bandura, 1982; Schunk, 1989). The level of confidence an individual has in his or her cognitive skills to perform an academic task would be an example of self-efficacy. In addition, a sense of efficacy is based on a belief that effort will lead to success or mastery (Ames, 1992a). Mastery is based on self-referenced standards, new skill development, understanding of the work, and gaining competence. However, Blumenfeld (1992) notes that student engagement drops off if improvement in performance is not meaningful.

Linked to self-efficacy is the concept of self-worth. When setting a performance goal, the focus is on both one's ability and one's sense of self-worth (Covington, 1984). A perception of high ability is formed by doing better than others, surpassing normative-based standards, or achieving success with less effort than others. However, when in a situation in which an individual's performance is equal to others but effort expenditure is high, the individual interprets this as indicating low ability, which reduces one's sense of self-worth. Future effort expenditure is lowered, especially when confronted with difficult tasks that may again reveal perceived low ability.

Control of learning beliefs is defined as an individual's belief about his or her ability to influence outcomes; that the environment will be responsive to his or her action (Schunk, 1985). While these control belief

theories use different terminology, such as "locus of control" (Rotter, 1966), "origins/pawns" (de Charms, 1968), and "internal/external/unknown source" (Connell, 1985), they share a common finding in that the student who believes in an internal source of control performs better in the classroom than the student who believes others, such as teachers and parents, are responsible for his or her success. In Weiner's (1985) causal attribution model, the internal/external locus can also be broken down further into what is directly under the individual's control, e.g., effort, and what is not under control, e.g., aptitude and luck.

While it is beyond the purview of this study to discuss the trait-state issue in personality research (Bem & Potkay, 1979), the issue of which motivation dimensions are global and which are situation-specific is an important one to motivation (Blumenfeld, 1992; Pintrich & Schrauben, 1992; Stipek, 1993). Research linking achievement motivation with cognition and learning strategy use is growing (Pintrich, 1989), which makes knowing how and to what extent student motivation changes over time increasingly important to student learning.

Pintrich and Schrauben (1992) suggest that the global or situation-specific nature of the motivation dimensions of their model can be aligned with the value and expectancy paths. The value motivation dimensions--goal orientation and

task value--would tend to be more global and be "carried" by the individual as he or she moves from task to task, while the expectancy motivation dimensions--control of learning beliefs and self-efficacy--would be more situation-specific. Therefore, those dimensions that are more global would tend to be more resistant to change in the classroom environment or structure, while those that are more situation-specific would be more affected by the classroom environment.

However, other researchers suggest different ways to align the motivation dimensions according to stability. For the goal orientation dimension, Jagacinski (1992) sees intrinsic and extrinsic goal orientations as more situation-specific variables rather than more global, individual difference variables. In a study of primary school children at the same grade level who were exposed to different types of instruction--thinking versus getting the right answer--goal orientations that differed were found. For the extrinsic goal orientation dimension, Stipek (1993) notes that as students become older, they adopt more performance goals and increase in their extrinsic goal orientation. This may be caused in part by a socialization process in which education becomes more competitive and less tolerant of mistakes at higher levels (Stipek, 1993; Tierney, 1992). These factors suggest that intrinsic and extrinsic goal orientations are different in stability: extrinsic goal orientation would be global in nature as suggested by the

Pintrich model, but intrinsic goal orientation might be more situation-specific as suggested by Jagacinski (1992).

Task value measures attitudes toward the course subject matter: interest, personal importance, and utility (Eccles, 1983). Interest in the subject matter may cause some instability in this dimension. Hagen, Reed, Wicker, Schallert, and Wiehe (1992) conducted a study in which interest in the course material, and other cognitive variables, was tracked during the phases of studying for a final examination. They found that interest peaked at the middle of studying and declined to the original level by the end of the study period. However, the other two sub-dimensions--personal importance and utility of the subject matter--should remain stable because of the long-term needs to which these are related: the course has value because it fulfills some personal image of the student's self, such as doing well in a difficult course, or it will fulfill a long-term goal, such as becoming a doctor. Therefore, the task value dimension should be more global in nature, as suggested in the Pintrich model.

Schunk (1985, 1989, 1992) found that the self-efficacy dimension is highly situation-specific. Perceptions of being able to do a task are usually highly situational and task difficulty is taken into consideration. Sometimes a strong achievement history based on certain situations makes self-efficacy into a more stable dimension, such as learned

helplessness (Stipek, 1993). However, this dimension should be, as the Pintrich model suggests, situation-specific and therefore responsive to changes in the classroom environment.

Rotter (1966) believed that individuals bring set expectancies into a situation based on previous task experiences and that the new situation is interpreted according to past expectancies. Hence, Rotter viewed an individual's locus of causality as more stable and generalizable. Weiner (1985) does not take as rigid a view as Rotter in that he sees the individual making judgments about specific task demands of the situation. However, Weiner does assert that certain attributions having an internal locus and under the individual's control, such as typical effort, can also be stable. In making effort attributions in a new situation, individuals will generally judge themselves in terms of typical effort, which has formed over time and across different situations. Therefore, the situation-specific nature of the control of learning beliefs dimension suggested in the Pintrich model may be a more global and stable dimension.

In summary, the Pintrich model aligns the motivation dimensions along the value and expectancy paths in determining their global or situation-specific nature. However, research has shown that value dimensions are not necessarily the more stable dimensions and expectancy

dimensions are not necessarily the more situation-specific dimensions. Other researchers suggest that intrinsic goal orientation, a value dimension, may be more situation-specific while control of learning beliefs, an expectancy dimension, will be more global in nature. The importance of the global or situation-specific nature of motivation dimensions is an important issue in student learning because of the natural changes in the classroom environment, such as the instructor changing the assignment format or evaluation method at various times over the semester or year. The global or situation-specific nature of motivation dimensions as categorized by the Pintrich model and a revised study model based on results of other research studies are summarized in Table 1.

Table 1. Global versus situation-specific motivation dimensions in the Pintrich and revised study model.

GLOBAL	SITUATION-SPECIFIC
Pintrich model	
Goal Orientation: $Intrinsic_{Value}$ $Extrinsic_{Value}$	Control of Learning $Beliefs_{Expectancy}$
$Task\ Value_{Value}$	$Self\text{-}efficacy_{Expectancy}$
Revised model*	
Goal Orientation: $Extrinsic_{Value}$	**Goal Orientation: $Intrinsic_{Value}$**
Control of Learning $Beliefs_{Expectancy}$	$Self\text{-}efficacy_{Expectancy}$
$Task\ Value_{Value}$	

* Dimensions in bold indicate crossover dimensions from the Pintrich model.

GRADE INFORMATION AND MOTIVATION

Evaluation is an extremely important aspect of maintaining achievement-related beliefs (Ames, 1992b; Stipek, 1993; Weiner, 1990) and, along with type of assignments, is more important for learning in college classrooms than mode of instruction (Pintrich, 1989). According to Blumenfeld (1992), evaluation currently poses some of the toughest challenges for educators because it raises such issues as determining how teachers can both create a mastery learning environment and have students meet

set standards within a specified time period and be accountable for learning.

The grade information studies of college student motivation have been limited to finding overall causes of low motivation, such as poor study habits and inattention to school work (Hart & Keller, 1980), rather than focusing on specific classroom causes. Most other studies of classroom task and evaluation have been at the primary and secondary levels rather than at the college level. Pintrich (1989) examined grades to classify students as high and low achievers and then related student type to motivation dimensions and learning strategy usage. However, he did not take into account any shifts in motivation patterns over the course of the semester as a result of grade information. Using *P-cluster* analysis, Pintrich found that students who were traditionally high achievers were also those with high effort and attention regulation. They also had high expectancies for success in the course and believed that effort and ability would assist them in getting a good grade, at least at the outset of the semester. However, students low on achievement measures exhibited few metacognitive strategies, little effort regulation, and low expectancy for success in the course.

Students need feedback on their ability levels to guide their efforts in addressing their strengths and weaknesses, leading to gains in confidence and self-efficacy (Stipek,

1993). Consequently, the optimal feedback is specific, constructive feedback that provides students with information on their errors and provides opportunities to correct them. This feedback is also private and non-competitive. This type of feedback relates positively to all major motivation dimensions because it fosters (a) a learning, mastery goal orientation and more engagement in material; (b) effort attributions because the feedback is specific on what needs to be done to improve; (c) risk-taking on challenging tasks because errors are not seen as "bad" but as opportunities to learn; and, (d) a view that personal improvement is an indicator of self-efficacy for the task.

By contrast, feedback that is broad and information-poor (such as a single letter grade), which does not provide information or an opportunity to correct problems, affects motivation negatively (Stipek, 1993). In addition, if the information is made public and the grading is competitive, positive motivation will be reduced for the majority of students. In classrooms that are uni-dimensional in terms of tasks and activities, social comparison is highlighted and academic and social self-concept could be threatened. By contrast, in multi-dimensional classrooms, there are different types of tasks, and social comparison becomes more difficult (Rosenholtz & Simpson, 1984).

The specific effects on motivation by this type of evaluation structure are negative and cumulative. It will foster an extrinsic, ego-involved learning goal, which can be seen as ineffective because the focus is on the self and looking good rather than on learning new strategies to improve or being engaged in the material, especially if grades are made public. The cause of success and learning will shift outward to ability or luck because the single grade connotes ability ("I'm a 'C' student.") or the grade is based on how others do as well as the student's own performance. Challenging tasks will be avoided by high achievers because making mistakes is "bad" and getting a high score or grade is "good"; the low achievers will not even try because no amount of effort will result in being as good as the others. Finally, self-efficacy will be fragile and artificial for the high achievers and non-existent for the low achievers.

Another aspect of evaluation is how a student interprets the feedback or grade he or she receives (Nicholls, 1992; Weinstein, 1983). Student evaluation of grade information can be as important as the actual grade itself. Two students who receive a "B" grade may have different interpretations of the grade. If the task is perceived to be easy by one student who considers himself or herself to have high ability, then this student might feel that the grade was "low," and reassess his or her self-

efficacy for mastering the material. The other student, however, may perceive the task to be difficult and a challenge to his or her ability level. Such a student would feel that this "B" grade was high, and reassess upward his or her self-efficacy.

There may be some limit to the effects of evaluation, especially at the college level. Pintrich (1989) noted that in the college classroom, the goal structure, whether the classroom is individualistic, cooperative or competitive, is sometimes determined by students in spite of what the instructor intends. Students may form their own study teams in a competitively graded (curve) class.

In addition, classroom factors such as task instructions may also mediate the effect of evaluation at the college level. Jagacinski (1992) conducted an experiment on college students in which they were given ego-involving and task-involving instructions on a computer game. Students then played the game, with half given self-referent feedback while the other half was given social comparison feedback. Those who were given task-involving instructions were more likely to persist in playing extra games when given self-referent feedback, while those given ego-involving instructions were more likely to persist when given social comparison feedback. Thus, the effect of a classroom structure such as evaluation on motivation may be mediated by other structures or student behavior. Students may

redefine the evaluation structure, such as forming their own study groups. Conflicting types of task instruction and evaluative feedback may negate the effect each has on motivation.

COLLEGE STUDENT CHARACTERISTICS AND MOTIVATION

When students enter a learning situation, the students' individual characteristics as well as the classroom environment influence their motivation and cognition. Both the general person-environment fit models (Lewin, 1954) and the educational aptitude-treatment interaction (ATI) models (Corno & Snow, 1986) support the major role that individual characteristics play in student achievement.

In these models, the characteristics of the individual and the situation, or educational setting, interact to determine student achievement. Corno and Rohrkemper (1985) noted that individual differences in aptitude, such as prior experiences, general ability level, and mental states at the time interact with the various conditions for learning in classrooms, such as tasks and socio-instructional support. In the college setting, the individual student and his or her particular experience and aptitude may be even more important than at the primary or secondary levels because much of the learning in college occurs outside of the

classroom and is under the student's direct control (Pintrich, 1989).

Achievement motivation in college students has been researched primarily from a need to address retention or student persistence problems. Consequently, researchers have used as dependent variables broad measures such as grade point ratios, graduation rates, and overall satisfaction with college (Livengood, 1992; Wambach, 1993). The independent variables have been memberships in special populations, such as underrepresented ethnic groups and women, socio-economic variables, high school performance, life stages, perception of program difficulty, and other motivation dimensions. The motivation dimensions generally were found to be positively related to persistence and academic achievement. Because these studies were driven by institutional research, not much was done at the course level. Stark et al. (1988) have more recently conducted a wide ranging study of a variety of classroom structures, such as teaching format and goals, in which motivation dimensions were among the many dependent variables. Generalization from the study is somewhat limited, however, because of the small sample sizes.

Tinto (1987) regards the academic experience as one of breaking away from old communities and joining a new one, calling it a time of transition. Tierney (1992) has been critical of Tinto's theory, asserting that culturally

different groups who do not share the same values as those of academia (i.e., competitive and normative) may actually become more alienated if they attempt to join this new academic community as envisioned by Tinto. Tierney's argument is supported by early research conducted by Pace (1970), in which it was found that college students belonging to a certain ethnic subgroup did not find the college experience consonant with their personal needs. Feelings of alienation are important because retention rates for groups who are new to campus culture are low.

Students new to the academic environment would be more prone to alienation and thus would be presumed to have greater fluctuations in motivation dimension levels. There are at least two types of academic newcomer. The first is the "traditional" freshman, those who enter the university directly from high school. The freshman year experience has been extensively researched (Astin, 1993), and special courses to orient the student to the university culture have been developed. The second type of academic newcomer is the student who is first in his or her immediate family to attend a university. These students are not familiar with the university culture and academic life and may not have the same type of support as others. Both of these groups of students would likely have unreasonable expectations of themselves and the university, which in turn could affect their motivation levels and stability over time. There may

be some overlap in these types as well, in which a traditional freshman is also first in his or her family to attend a university. A student such as this might have a rougher transition into university life than would an older, "nontraditional," first-generation freshman who may have had other life experiences that would prepare him or her for the university. Some nontraditional students, however, also may feel particularly threatened by younger students and the campus environment.

MEASUREMENT OF MOTIVATION

While there are many studies of motivation, most instruments measure motivation along a single dimension and are geared toward the primary school population. Harter (1981b) developed a measure of children's intrinsic and internalized motivation. Ryan and Connell (1989) developed the Academic Self-Regulation Questionnaire, which assesses the students' external, introjected, identified, and intrinsic motivation. Other motivation dimensions assessed are attributions for performance on academic tasks (Stipek, 1993) and goal accomplishment style (Atman, 1993).

Most of the motivation instruments are self-report instruments, which leave open to question their validity. However, several studies have supported the validity of self-report instruments to measure various motivation

dimensions. Peterson and Swing (1982) conducted an experimental study of fifth and sixth grade student attention during instruction and found that student perceptions of their attention were better predictors of achievement than the observers' reports of students' attention. Studies by Schunk (1992) and Assor and Connel (1992) support the validity of student self-report in measuring motivation dimensions.

The only instrument that measures motivation in a multi-dimensional way that was developed specifically for the college population at the course level is the Motivated Strategies for Learning Questionnaire (MSLQ: Pintrich, Smith, Garcia & McKeachie, 1991). This instrument, based on a comprehensive expectancy-value motivation model (Pintrich, 1989), consists of five scale dimensions: intrinsic and extrinsic goal orientations, task value, self-efficacy, and control beliefs. A sixth dimension, expectancy for success, was collapsed into the self-efficacy scale in the 1991 version of the MSLQ.

The strengths of the MSLQ as a measure of motivation are the broad theoretical base upon which it was developed and the fact that it has been validated through use on a large number of college students over the past 10 years. The MSLQ has internal scale reliabilities ranging from .62 to .93 (Cronbach's alpha [α]).

FOCUS OF PRESENT STUDY

Assuming that the class environment influences student achievement motivation dimensions (Ames, 1992b; Blumenfeld, 1992; Corno & Rohrkemper, 1985; Pintrich, 1989) and that these dimensions can be integrated into a motivation system or model (Ford, 1992; Pintrich, Marx, & Boyle, 1993; Weiner, 1990), it can be expected that grade information, which is a strong classroom environmental structure at the college level (Ames, 1992b; Pintrich, 1989; Stipek, 1993; Weiner, 1990), will significantly affect the college student's motivation system.

In addition, assuming that student characteristics, as well as the classroom environment, affect student motivation beliefs (Corno & Snow, 1986; Lewin, 1954), it can be expected that student characteristics that are linked to motivation beliefs, such as being new to the university or academic culture, may enhance changes in student motivation beliefs about learning and mediate the environmental influences on these beliefs (Tierney, 1992; Tinto, 1987).

Studies of motivation systems have indicated that certain dimensions are more situation-specific and will fluctuate with task or environmental demands, while other dimensions are more global and less susceptible to change. Some have argued that the value dimensions--intrinsic and extrinsic goal orientations and task value--are more global,

and the expectancy dimensions--control of learning beliefs and self-efficacy--are more situation-specific (McKeachie, Lin, Pintrich, 1988; Pintrich & Schrauben, 1992). However, study results have called into question the supposed stability of the value dimensions, specifically intrinsic goal orientation (Jagacinski, 1992), and the supposed context-dependence of expectancy dimensions, specifically the control of learning beliefs. In the present study, it is asserted that (a) the measurement of situation-specific dimensions will be affected more than the measurement of the global dimensions when exposed to a powerful classroom environmental structure such as grade information; (b) expectancy motivation dimensions are not necessarily more situational nor are value motivation dimensions more stable; and, (c) student characteristic variables, such as "newness" to the academic culture, may mediate motivation dimension shifts.

Most classroom environment researchers have investigated the effect of an environmental structure on one or two motivation dimensions but not on a motivation system (Corno & Rohrkemper, 1985; Marshall & Weinstein, 1984). Research on whether motivation dimensions are situation-specific or global has been limited to lab conditions and not done in the classroom over time. In addition, the testing of intrinsic goal orientation and control of

learning beliefs has been done in isolation and not as part of a system or model.

Most studies have been done at the K-12 levels, and only a few studies have been done at the college level (Pintrich, 1989). Student characteristics have been linked to student motivation, but only to broad motivation dimensions such as persistence in college and not to specific classroom achievement motivation dimensions. In this study, questions about the classroom environment, motivation systems, and student characteristics will be addressed through six hypotheses.

HYPOTHESES

The following five hypotheses test the effect grade information, and a strong classroom structure, will have on student motivation, conceptualized in terms of the Pintrich expectancy-value motivation model. Predicted effects are based on the model's global or situation-specific nature of motivation dimensions. The Pintrich model views the value dimensions, which are intrinsic and extrinsic goal orientation and task value, as global dimensions and therefore not affected by grade information. The expectancy dimensions, which are control of learning beliefs and self-efficacy, are seen as situation-specific and therefore would be most likely to be affected by grade information. However,

this study posits that expectancy and value are not good predictors of motivation dimension stability. Instead, research has shown that intrinsic goal orientation and self-efficacy will be situation-specific, while extrinsic goal orientation, control of learning beliefs, and task value will be global. The comparison between the Pintrich model and the revised study model is shown in Table 1. The study hypotheses will test the predicted global or situation-specific nature of the motivation dimensions of the revised study model.

In this study, students filled out questionnaires in which each dimension was measured at the beginning of the semester in order to obtain a pre-grade information score and then again after grades were received from the mid-term examination to obtain a post-grade information score. Changes in motivation were assumed if the scores received after grade information were significantly different (p = .05) from those scores received before grade information.

Receiving low grades ("D" and "F") and having grades below what was expected were the two grade information conditions that were tested. The other grade information levels examined, e.g., high grades and grades above what was expected, were not expected to have as large an effect on student motivation nor to be as important from a student retention and persistence point of view as the low grade and below what was expected grade information levels. The

following five hypotheses predicted the effect that grade information would have on the five dimensions of the revised study model:

Situation-specific dimensions: Significant differences

Hypothesis 1

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **intrinsic goal orientation** scores **significantly different** from those scores obtained at the beginning of class.

Example of motivation change: After grade information, students who receive lower than expected or low grade information may have less preference for course material that provides challenges and opportunity to learn new things.

Hypothesis 2

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **self-efficacy** scores **significantly different** from those scores obtained at the beginning of class.

Example of motivation change: After grade information, students who receive lower than expected or low grade information may be less certain about being able to

understand the most difficult material presented in course readings.

Global dimensions: No significant differences (null)

Hypothesis 3

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **extrinsic goal orientation** scores **not significantly different** from those scores obtained at the beginning of class.

Example of motivation stability: After grade information, students who receive lower than expected or low grade information may have no change in their desire to obtain better grades than other students in the class.

Hypothesis 4

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **task (course) value** scores **not significantly different** from those scores obtained at the beginning of class.

Example of motivation stability: After grade information, students who receive lower than expected or low grade information may have no change in their

judgment of being able to use what is learned in this course in other courses.

Hypothesis 5

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **control of learning beliefs** scores **not significantly different** from those scores obtained at the beginning of class.

Example of motivation stability: After grade information, students who receive lower than expected or low grade information may have no change in their belief that if they try hard enough, then they will understand the course material.

The sixth hypothesis focused on how students who are new to the university or academic culture may mediate the influence of grade information on their motivation. To determine the effect of these characteristics, a correlation analysis was conducted to determine the relationship between the model motivation dimensions and the characteristics of the academic newcomer. The factors to be correlated were the difference scores of the pre- and post-grade information motivation dimension means and the students' age and whether they were first in their family to attend a university.

Hypothesis 6

Academic newness, as represented by **age** and **generation at a university**, will be significantly and positively correlated with the change in pre- and post-grade information scores ($score_{post}$ - $score_{pre}$ = $score_{change}$) for the five model motivation dimensions.

Example of correlation: A significant and positive correlation between age and motivation change scores and between generation at a university and motivation change scores will indicate a positive relationship between being an academic newcomer (a younger student and a student first in the family to attend a university) and declining pre- to post-grade information motivation levels.

CHAPTER III

METHOD

This chapter describes the participants, measurement instrument, and procedure used in the study. The method of analyzing the data is also described.

PARTICIPANTS

The participants in this study were 725 students enrolled in four large introductory courses at the University of Hawai'i at Mānoa: Introduction to World Civilization (History 151), Introduction to Chemistry (Chemistry 161), Introduction to Sociology (Sociology 100), and Introduction to Travel Industry Management (TIM 101). These courses were selected because they are fairly representative of the courses offered at major universities to first- and second-year students: humanities, science, social science and professional. A diversity of courses was also desired in order to minimize the effect of specific courses. Courses from the language and literature area were omitted due to the typically smaller class size and the variety of instructional formats, which make it harder to isolate the effect of the classroom structure being studied.

The initial enrollments in these courses, effective the first day of class were: Chemistry, 197; History, 329;

Sociology, 139; and Travel Industry Management, 138. However, the enrollment declined somewhat in these courses during the first two weeks of class and up to the ninth week, when students could drop or withdraw from the course. Only 225 students provided social security numbers or student identification numbers at each of the three questionnaire administrations. Of these 225, 111 signed access to course grade information forms. However, the other measure of grade information, in which the students were asked if there was a discrepancy between the grade received and the grade expected on the first mid-term examination, was an item included on the last questionnaire. Therefore the 225 students who could be identified across the three administrations made up the study sample.

The examination or project on which the first grade was based varied from course to course: the History course used a written essay examination; the Chemistry and the Travel Industry Management courses, a multiple-choice examination; and, the Sociology course, a take-home written project. The examinations were administered three to six weeks into the semester. Exam results were returned to students one to two weeks after the examination was administered.

Students were informed of their grades through various means. The students in the History course were given their essay examination booklet back with a numeric and letter grade, as well as comments. The Chemistry students were

given individual computer printouts indicating their score, the class average score, and right answers for each examination question. The Sociology students were given their written projects with a letter grade and comments. The Travel Industry students looked at a computer printout of their scores and class averages posted one day during class. In small group discussion labs that met weekly, students in the History course received some feedback on course performance before the first examination through discussion and homework assignments that simulated examination questions.

The Chemistry course had three mid-term examinations, each worth 20% of the final grade. The instructor for this course told students when they received the grades for the first mid-term examination that he would consider improvements in scores for those students whose grades were on borderlines between grades when the final grades were to be computed. The History course had one mid-term examination worth 100 points, or 25% of the final grade. The Sociology course had four written projects, each worth 25% of the final grade. Students in this course could correct and resubmit their projects if they wanted a higher grade, with five students (4%) taking advantage of this option for the first project. The Travel Industry Management course had three mid-term examinations, the lowest of which was eliminated in the computation of the final grade. The

remaining two mid-term examinations were worth 125 points each, or 31% of the final grade. The first mid-term examination grades for all of the courses were fairly evenly distributed (see Table 2).

Table 2. Mid-term examination grade distribution by course.

Course			Grade (row = 100%) A	B	C	D	F
	N						
CHM		%	8.2	16.5	58.2	12.9	4.1
	194	*n*	16	32	113	25	8
HIS		%	11.5	20.6	37.2	19.5	11.2
	287	*n*	33	59	107	56	32
SOC		%	20.8	18.0	21.6	33.3	6.3
	111	*n*	23	20	24	37	7
TIM		%	13.6	18.1	38.3	20.3	9.7
	133	*n*	18	24	51	27	13
Total		%	12.4	18.6	40.7	20.0	8.3
	725	*n*	90	135	295	145	60

CHM = Chemistry. HIS = History. SOC = Sociology. TIM = Travel Industry Management.

MEASUREMENT INSTRUMENT

To measure student motivation, the Motivated Strategies for Learning Questionnaire (MSLQ), developed by the National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan (Pintrich, Smith, Garcia &

McKeachie, 1991), was used (see Appendix A). The MSLQ is a self-report instrument designed to assess college students' motivation orientations and learning strategies usage in college courses. Students rate themselves on a seven-point Likert scale, ranging from "not at all true of me" to "very true of me." The student score on a scale is derived by taking the mean of the rating of the items that make up that scale. Results of studies using the MSLQ, in different versions since 1982, have shown that the scales for this instrument have reasonable internal consistency, with Cronbach's alpha (α) ranging from .62 to .93, and that the scales also are moderately correlated with academic performance (Pintrich et al., 1991).

While the MSLQ consists of both motivation and learning strategies sections, this study used only scales of the motivation section, which contains 31 items (see Appendix A). The MSLQ learning strategies questionnaire, which contains 50 items, was used as the "dummy" questionnaire during the second survey administration (see Appendix D). The scales of the MSLQ are designed to be modular and can be individually selected according to research or instructional needs. The scales of the MSLQ are presented in Table 3, with a representative item given for each scale.

Table 3. Scales and sample items of the MSLQ (Pintrich model)

Value Dimension Scales

Intrinsic Orientation (4 items)

"In a class like this, I prefer course material that really challenges me so I can learn new things."

Extrinsic Orientation (4 items)
"If I can, I want to get a better grade in this class than most of the other students."

Task Value (6 items)
"I think I will be able to use what I learn in this course in other courses."

Expectancy Dimension Scales

Control of Learning Beliefs (4 items)
"If I don't understand the course material, it is because I didn't try hard enough."

Self-efficacy for Learning and Performance (8 items)
"I'm certain I can understand the most difficult material presented in the readings for this course."

The value and expectancy scales are used to measure and assess student motivation dimensions. The MSLQ also includes an affective dimension scale that consists of test anxiety items, but it is not of major concern in this study. Affect in motivation is a complex construct and may not be adequately operationalized by test anxiety alone. Therefore, while data for all 31 items in the MSLQ motivation section was collected, only 26 items were analyzed, which were those items pertaining to the expectancy and value motivation

dimensions. Directions for the MSLQ ask students to respond to the items in terms of a specific course they are taking ("In this course..."), with the exception of two items in the Intrinsic Goal Orientation scale ("In a class like this...").

The following demographic information was collected on the first administration of the MSLQ: age; gender; ethnicity; residency; "generation" in college; semesters at the university or other colleges; and, clarity in deciding on a major (see Appendix B). On the third questionnaire administration, course difficulty and grade discrepancy information were obtained. The grade discrepancy question asked whether the grade the student received on the past exam was discrepant from what was expected and, if discrepant, in which direction and to what degree. The course difficulty question asked to what extent the course was more or less difficult than other courses students were taking or had taken (see Appendix C).

PROCEDURE

At the beginning of the Fall, 1993, semester, the instructors from the four courses in the study agreed to three administrations of the MSLQ in their courses: the first, shortly after the beginning of the semester (Time 1); the second, the class period prior to the first mid-term

examination (Time 2); and, the third, the class period after students received their grades from the first mid-term examination (Time 3). The schedule of questionnaire administration, examinations and when students were notified of their grades is shown for each course in Table 4.

Table 4. Schedule of questionnaire administration, examinations, and grade information (weeks into semester)

	Administration				Administration
COURSE	1	2	Exam	Grades	3
CHM	3	5	5	6	6
HIS	3	7	7	9	10
SOC	3	9	9	10	11
TIM	3	5	5	6	6

The intent of the questionnaire administrations was to form two groups of students in the courses: an experimental group and a stability test group. The stability test group was comprised of one-third of the total students. Their scores from Time 1 and Time 2 were used to test the stability of the motivation dimensions measured by the MSLQ. The stability test group student scores were identified and linked by the students' social security or identification numbers. The experimental group took the MSLQ during Time 1, along with the stability test group, but did not take the MSLQ at Time 2 because they would be taking the MSLQ at Time 3. Instead, the experimental group took the "dummy"

questionnaire during Time 2, which required about the same length of time to complete as did the MSLQ. At Time 3, the MSLQ was distributed to all students. However, only the experimental group student scores were used. The experimental group was identified by the students' social security or student identification numbers. The MSLQ administrations and the group formation sequence are shown in Table 5.

Table 5. Formation of experimental and stability test groups.

Questionnaire administration	Proportion of students	Purpose
1st	all	Time 1 pre-grade information scores: stability test and experimental groups
2nd	1/3	Time 2 pre-grade information scores: stability test group
< Mid-term examination/project>		
3rd	2/3	Time 3 post-grade information scores: experimental group

At the beginning of each questionnaire administration, the following points, which was also written on the questionnaire cover sheet, were emphasized by the researcher:

1. the purpose of the questionnaire;
2. the voluntary nature of participation;
3. the confidentiality of answers and results;
4. the need to answer frankly and, in the case of the second and third administrations, to answer as they felt at the moment;
5. the need to be careful in marking the scan sheets to make sure that the answer number corresponded to the number on the bubble for that question;
6. the need to complete any additional demographic or grade release form information; and,
7. the need to return the completed questionnaires when finished.

Besides the MSLQ questionnaire, students were provided with a computer scan sheet (National Computer Systems General Purpose Answer Sheet [T4887-543], see Appendix E) on which to record their answers and a pencil if they indicated that they needed one. While the scan sheet had 10 bubble options numbered from "0" to "9," the questionnaire items varied in number of response options. The MSLQ items were all seven-point Likert responses, which required a response from "1" to "7." The range of possible responses to demographic items varied from "0" to "9," using the maximum possible number of alternatives on the computer scan sheet, to "1" to "2," for items that required only "yes" or "no" responses. The completed computer answer sheets were scanned

at the university's computer center and the data were analyzed using programs in the SAS statistical package (version 6.08).

First Questionnaire Administration

The first questionnaire was administered immediately following the period in which students could disenroll from a course without penalty (the third week of the semester, see Table 4). For the History and Travel Industry Management courses, the questionnaire was administered during the fifth class period; for the Sociology course, during the seventh class period; and, for the Chemistry course, during the sixth class period. These class periods occurred during the third week of the semester.

This questionnaire administration occurred during the first 15 minutes of class, except for the History class, in which it occurred during the final 15 minutes of class. The first questionnaire included 42 items. The first 31 items were the MSLQ items and the remaining 11 were the demographic questions. In addition, the students provided information on gender, birth date, and social security or student identification number, which were categories preprinted on the computer scan sheet. The students were also instructed to mark a certain number in the grade level

category of the answer sheet, which was used to code the administration time and course.

Second Questionnaire Administration

This questionnaire administration took place in a class period that fell during the week preceding the first major examination or project completion date. The times of this administration varied according to individual course schedules (see Table 4). As with the first administration, the first 15 minutes of the class period were used to administer the questionnaire, except for the History class, in which the administration took place during the last 15 minutes of class. During this administration, the lecture given by the History instructor ran longer than expected and left only five minutes to complete the questionnaire. Consequently only about half of the students remained to complete the questionnaire. However, the History course was the largest of the four courses in the study, so even with the loss, 43% of the students in the final sample came from the History course.

Two questionnaires were distributed at this time: (a) the MSLQ to one-third of the students, who made up the stability test group, and (b) a "dummy" questionnaire to the remaining two-thirds of the students, who made up the experimental group. The dummy questionnaire was administered

to the students in the experimental group so that they had something to do while the stability test group students were completing the MSLQ. The dummy questionnaire was the second part of the MSLQ, which pertains to learning strategies. Because the two groups were formed during this administration, care was taken to make sure that the distribution of the two questionnaires was random. The two questionnaires--the MSLQ and the dummy questionnaire--were sorted prior to distribution so that every third questionnaire was the MSLQ.

Third Questionnaire Administration

The times for this third questionnaire administration varied according to how quickly the examination or projects were graded and reported to the students (see Table 4). The times ranged from one to two weeks after the examination or project due date.

For all courses, including History, the MSLQ was administered during the first 15 minutes of the class period following grade information feedback. All students completed the MSLQ, but the stability test group data were later isolated from the experimental group data. During this last administration, steps were taken to obtain the grade information necessary to test the research hypotheses. The measure to determine whether students received grades that

were discrepant from what they expected was obtained from one of the items added to the questionnaire following the MSLQ items (Item 32). In addition, an access to grade information form for students to sign was attached to the questionnaire that would allow the investigator to have access to the students' grades for the course. Of the 158 students in the experimental group, all completed the grade discrepancy question and 111 signed the access to grade forms.

The final sample of 227 was not as large as expected, considering the 725 students enrolled in the four courses (see Table 6). The stability test group consisted of 69 students or 29% of the potential number of students in the stability test group, i.e., the one-third of the students who took the MSLQ during the Time 2 administration. The experimental group, i.e., the two-thirds of the students who took the MSLQ during the Time 3 administration, consisted of two grade information groups: (a) the actual grade group, consisting of 111 students or 23% of the potential students in the experimental group; and (b) the perceived grade discrepancy group, consisting of 158 students or 33% of the potential students in the experimental group. The attrition rates of 71% for the stability test group, 77% for the actual grade group, and 67% for the perceived discrepancy group may have been caused by three factors: (a) Students attended classes irregularly, which would have caused them

to miss one or more of the questionnaire administrations; (b) Students disenrolled from the course after the mid-term examination but before the Time 3 administration, which would have caused them to miss the Time 3 administration; and, (c) Students were reluctant to provide social security or student identification numbers and actual grade information because of a concern for privacy.

Table 6. Number of students (*n*) in the stability test and experimental groups and percentage of potential students in each group providing grade information.

Course	T	Stability			Experimental				
		P_s	O		P_e	AG		PGD	
	N	*n*	*n*	%	*n*	*n*	%	*n*	%
CHM	194	65	14	22	129	29	23	38	30
HIS	287	96	30	31	191	47	25	69	36
SOC	111	37	10	27	74	7	10	19	26
TIM	133	44	15	34	89	28	32	33	37
Total	725	242	69	29	483	111	23	158	33

T = Total Students in Each Course.
P_s = Potential Stability Test Group (⅓ of T).
O = Obtained Stability Test Group (number and percent of P_s.
P_e = Potential Experimental Group (⅔ of T).
AG = Actual Grade Group Obtained (number and percent of P_e).
PGD = Perceived Grade Discrepancy Group Obtained (number and percent of P_e).

DATA ANALYSES

To test the hypotheses of this study, a quasi-experimental design was used. One group of students, the experimental group, was established to see how different types of grade information--the "treatment"--would affect student motivation over time, from the beginning of the semester (pre-grade information) to just after they received the grade information (post-grade information). In a true experimental research design, the pre- and post-observations of the control group would take place at the same time as those of the experimental group so that the effects of maturation or natural changes that occur during the time between observations could be identified and controlled. However, this study was undertaken in a natural setting and the treatment was not under the investigator's control, i.e., instructors could not be told to withhold grade information. Thus a comparison group was formed in which some of the effects of maturation could be detected. This comparison group was the stability test group for which motivation at the beginning of the semester and prior to the treatment or grade information was measured. A study such as this, in which a blend of experimental controls is used in a field setting, has the advantage of some internal validity controls, such as partially testing for maturation, and definite external validity in that the results are more

generalizable because the study is conducted in the field (Campbell & Stanley, 1971).

Motivation Stability

To test whether the stability test group experienced any changes on the motivation dimensions, three methods were used. The first was to see if the Time 1 and Time 2 means were significantly different from each other for each dimension. A repeated measure *t* test was used to determine the significance of the differences between the means (p = .05). If none of the dimensions was significantly different, it could be assumed that there were no extraneous factors affecting motivation, at least during this time period.

As an added check on motivation dimension stability, the variances of the Time 1 and Time 2 scores were compared to see if they were significantly different. This was done in case the means were not significantly different, but the variances were. For example, the Time 1 variance of motivation dimension scores could be very low while the Time 2 variance of scores could be dispersed, which would indicate that some effect was causing students to report extreme scores on the scale. The significance of the difference between correlated variances test was used to check for significant differences (Ferguson & Takane, 1989). If the variances were not significantly different (p = .05),

this would be another indication of the stability of the motivation dimensions.

As a final measure of the stability of the motivation dimensions, the test-retest reliability method was used. The MSLQ has been reported to be a relatively stable instrument, with Cronbach's alpha (α) ranging from .62 to .93. Therefore, if the test-retest correlations are found to be low, then there might be changes in student motivation occurring during the period of this study. If the correlations are high then further support for the stability of the motivation dimensions is provided.

If there are significant differences in the tests of means and variances and low test-retest reliability, then there might be some maturation or other effects occurring that would influence student motivation during this time. Consequently, any discussion of changes in motivation for the experimental group from Time 1 to Time 3 would need to take into account any changes found in the stability test group.

Grade Information and Motivation Dimensions

The first five hypotheses in this study examined motivation dimensions over time, at the beginning of the semester and after the mid-term examination, and how receiving and perceiving a certain grade, i.e., grade

information, affects or does not affect motivation. The study can be seen as a simple two-factor, time and grade information, repeated measures experiment, in which measurement is repeated on one factor, time. Thus, in this study, each student was assessed twice on each of the five motivation dimensions.

The hypotheses of this study are based on how two different types of grade information affect motivation. The first type of grade information is the grade received. This measure will be called "actual grade" and refers to the letter grade the student received on his or her mid-term examination or project. Because the number of students responding to the individual grade levels (e.g., "A," "B") were too small to use for statistical analyses, the five grade levels were collapsed into three levels: *A-B*, *C*, and *D-F*. The data table design for the actual grade and time factors experiment, with the measurement of students repeated across the time factor, for each motivation dimension is shown in Table 7.

Table 7. Data table design for actual grade and time factors, repeated across time.

Motivation Dimension X

Actual Grade Groups	Students	Time: Grade Information: Pre	Time: Grade Information: Post
A-B	S_1 S_2 S_3		
		$Mpre_{AB}$	$Mpost_{AB}$
C	S_4 S_5 S_6		
		$Mpre_{C}$	$Mpost_{C}$
D-F	S_7 S_8 S_9		
		$Mpre_{DF}$	$Mpost_{DF}$

The second type of grade information that affects motivation and is integral to the first five hypotheses is the perceived grade, whether the student felt that the grade received on the mid-term examination or project was "quite a bit below," "below," "about the same as," "above," or "quite a bit above" what they had expected (see Appendix C, item 32). Because the number of students responding to the five individual levels of perceived grade discrepancy was too small to use for statistical analyses, the five levels were

collapsed into three levels: (a) *below expected*, which consisted of the two below expected responses ("quite a bit below" and "below" what they had expected); (b) *same as expected*; and, (c) *above expected*, which consisted of the two above expected responses ("quite a bit above" and "above" what they had expected). The data table design for this perceived grade discrepancy and time factors experiment, repeated across the time factor, for each motivation dimension is shown in Table 8.

Table 8. Data table design for perceived grade discrepancy and time factors, repeated across time.

Motivation Dimension X

		Time	
		Grade Information: Pre	Post
Perceived Grade Discrepancy Groups	Students		
Above expected	S_1 S_2 S_3		
		$Mpre_A$	$Mpost_A$
Same as expected	S_4 S_5 S_6		
		$Mpre_S$	$Mpost_S$
Below expected	S_7 S_8 S_9		
		$Mpre_B$	$Mpost_B$

With the data tables established, an analysis of variance was performed to determine if the differences between the means were significant. The SAS procedure GLM was used instead of the ANOVA procedure because the GLM procedure computes the same sums of squares and *F* statistic output as the ANOVA procedure but handles unequal cell sizes better than the ANOVA procedure.

One of the best ways to report data besides the mean and analysis of variance is the use of graphs, especially if one is trying to see interaction between the factors (Kerlinger, 1986). Therefore, the graphs of the means for each grade information group were examined to determine how each group's motivation level changed across time as the group's grade information was received. For example, the pre- and post-grade information means for the *same as expected* group may be almost the same, showing no effect from their grade information. But the pre- and post-grade information means for the *below expected* group may show a decline across time. If this dimension were a situation-specific dimension as outlined in this study's motivation model, the significant difference in means across time and the decline from the pre- to post-grade information means of the *below expected* group would support the dimension hypotheses. Should the interaction between time and grade information groups be significant as well, it would

contribute to the explanation of groups having different motivational levels over time.

Developing a data table, calculating the analysis of variance, and graphing the motivation levels for the grade information groups across time was done twice, once using the actual grade and then again using the perceived grade discrepancy as the grade information measure, for each of the five motivation dimensions. This method of analysis was used to test the first five study hypotheses regarding the effect of grade information on student motivation.

Academic Newcomer Variables and Motivation Dimensions

The data analysis used to test the last study hypothesis was a correlation analysis. The change in the pre- and post-grade information scores for each motivation dimension was calculated ($score_{post} - score_{pre} = score_{change}$), yielding five motivation change scores. The students were divided into two groups, those who were in their first semester at the university and those who had two or more semesters at the university. Two separate correlation analyses were then performed. The first analysis was performed on the first semester students in which age and generation at the university variables were correlated with each of the five motivation dimension change scores. The second analysis was performed on the two or more semester

students, again having age and first generation at the university variables correlated with each of the five motivation dimension change scores. The second analysis was performed to determine if any relationships between the academic newcomer variables and the motivation change scores carried over into subsequent semesters at the university. For the first semester group, the age range was between 19 and 43, and for the two or more semester group, between 20 and 47. In the first semester group (n = 152), 28.9% indicated they were first in their family to attend a university and in the two or more semester group (n = 75), 34.0%. To achieve a larger number for the correlation analysis, all 227 students were used.

A positive correlation between motivation dimension change scores and age would indicate that the younger the student, the smaller or more negative the change score. Likewise, a positive correlation between motivation dimension change scores and generation at a university would indicate that students who were first in their family to attend a university would more likely have smaller or more negative change scores.

CHAPTER IV

RESULTS

In this chapter the results of the three stability tests are presented first, followed by those of the grade information groups. The grade information group results are presented in terms of the hypotheses tested.

MOTIVATION STABILITY TESTS

The group used to test the stability of the motivation dimensions from the first questionnaire administration (Time 1) at the beginning of the semester, to the second administration (Time 2) just prior to the examination, consisted of 69 students, or 30.6% of the total 225 participants in the study. Three tests to determine motivation stability were conducted on the scores of this stability test group.

For the repeated measures *t* test of the Time 1 and Time 2 means of each motivation dimension scale, the difference between the two means for each scale was not expected to be significant. The results of this stability test, as shown in Table 9, indicate that there were significant differences between the Time 1 and Time 2 means of the task value scale ($p < .01$) and the intrinsic goal orientation scale ($p < .05$). The difference between Time 1

and Time 2 self-efficacy means approached statistical significance ($.05 < p < .10$). The Time 1 and Time 2 means of the extrinsic goal orientation and control of learning belief scales were not significantly different.

Table 9. Motivation stability: Repeated measures *t* test of Time 1 and Time 2 means.

	Mean Scores		
	Time 1	Time 2	*p*
Intrinsic goal orientation	5.07	4.76	.022
Extrinsic goal orientation	5.27	5.15	.228
Task value	5.24	4.99	.003
Self-efficacy	5.00	4.89	.085
Control of learning beliefs	5.57	5.44	.281

The second method of assessing the stability of the motivation dimension was to compare the scale variances of Time 1 and Time 2 responses. The assumption was that if score variances were not significantly different from Time 1 to Time 2, then the students were responding consistently over time. The significance test for correlated, or repeated measure, variances (Ferguson & Takane, 1989) was calculated and its results showed no scale variance differences approaching statistical significance for any of the motivation dimensions.

The final stability test for the motivation dimensions was the test-retest method of estimating the reliability of the questionnaire and indirectly the stability of the

motivation dimensions. The resultant correlations of the Time 1 and Time 2 dimension scores ranged from .53 to .84. The two dimensions that had low correlations were intrinsic goal orientation (r = .53) and control of learning beliefs (r = .59) (see Table 10).

Table 10. Motivation stability: Test-retest reliability in terms of Pearson product-moment correlations (r).

	Pearson r	Significance ($p <$)
Intrinsic goal orientation	.53	.001
Extrinsic goal orientation	.73	.001
Task (course) value	.84	.001
Self-efficacy	.76	.001
Control of learning beliefs	.59	.001

Of the three stability tests, only one test--the comparison of variances--clearly supported the notion that the motivation dimensions of students as measured by the MSLQ were stable from the beginning of the semester to the point in time just prior to the examination or project due date. The comparison of dimension means and the test-retest reliability over this period, however, did not show clear support of stability. In the comparison of means test, two dimensions, task value and intrinsic goal orientation, had means significantly different and the third dimension, self-efficacy had mean differences that approached significance. It should be noted that there was a decrease from the Time 1 to Time 2 means for all five motivation dimensions. For the

test-retest reliability correlations, intrinsic goal orientation and control of learning beliefs had fairly low correlations.

THE EFFECT OF GRADE INFORMATION ON MOTIVATION DIMENSIONS

Before presenting the results of the specific dimension hypotheses data analyses, the grade information measures should be described in more detail, as well as their relationship to each other, because both were being used to determine the effect of grade information on motivation. Each of the grade information measures had three levels. As shown in Table 11, the number of students in each level or group varied. In the actual grade measure, the lowest number of students were those who received a "D" or "F" on the mid-term examination or project. For the perceived grade discrepancy measure, the lowest number of students was those who received mid-term examination or project grades above what they had expected. For each grade information measure, the largest groups did not exceed 50% of the total students.

Table 11. Number of students (*n*) by grade information measure levels for the experimental group.

Grade Information Measures	Students	
	n	%
Actual Grade		
A-B	43	38.8
C	48	43.2
D-F	20	18.0
Total	111*	100 %
Perceived Grade Discrepancy		
Above expected	35	22.2
Same as expected	51	32.3
Below expected	72	45.5
Total	158*	100 %

* 111 of the 158 treatment group students allowed their grades to be used in this study; all treatment group students reported on their perceived grade discrepancy

Because of the importance of these two grade measures, and the smallness of the experimental group for each measure compared to the total number of students who were in the four courses for this study, the proportion of experimental group actual grade and perceived grade discrepancy levels was compared to that of the total students in the courses. In each of these comparisons, the actual number of levels, five grade levels and five perceived grade discrepancy

levels, were used rather than the three collapsed levels in order to provide a more detailed comparison. The intent of this comparison was to find out if the experimental group grade information responses were representative of all students in the four courses. As shown in Table 12, the experimental group grades and perceived grade discrepancy responses were similar to those of the total students surveyed. For the actual grade measure in the experimental group, the "A" grade level is somewhat overrepresented as compared to the total students surveyed, and the "D" grade level, underrepresented. For the perceived grade discrepancy measure, the proportions of students in each category for the experimental and total student groups are very similar.

Table 12. Comparison of experimental group and total students (study and non-study) actual grade and perceived grade discrepancy responses.

Grade Information Measure	Students			
	Experimental		Total	
	n	%	*n*	%
Actual Grade				
A	21	18.9	90	12.4
B	22	19.8	135	18.6
C	48	43.2	295	40.7
D	13	11.7	145	20.0
F	7	6.3	60	8.3
Total	111	100.0	725*	100.0
Perceived Grade Discrepancy				
Quite a bit above	8	5.1	23	5.1
Above	27	17.1	71	15.8
Same	51	32.3	148	33.0
Below	44	27.8	132	29.5
Quite a bit below	28	17.7	74	16.5
Total	158	100.0	448*	100.0

* The numbers for the grades came from the instructors' mid-term examination/project records, while the numbers for the perceived grade discrepancy came from the classes at the third questionnaire administration. Hence, the two numbers are different.

The relationship between the two grade information measures raised the question: Were they measuring the same thing? Were the students who received *A-B* grades at mid-term also those who received grades that were above what was expected? A simple correlation of the two measures, actual grades and the perceived grade discrepancy, was significant but low ($r = .38$, $df = 109$, $p < .001$). In addition, in examining the distribution of actual grade levels in the various perceived grade discrepancy groups, there was a balanced distribution of grades at the *below expected* level, which is of primary interest to this study. This distribution became increasingly skewed toward the higher actual grades as expectation moved from *same as expected* to *above expected* (see Table 13).

Table 13. Representation of actual grade levels in perceived grade discrepancy levels.

Perceived Grade Discrepancy	Actual Grades (Percent)				Total
	A-B	C	D-F	%	*n*
Above expected	62	33	5	100	21
Same as expected	53	29	18	100	38
Below expected	20	57	23	100	51

The results of the grade information analyses indicated that the proportion of students in the grade groups for the

two grade information measures of the study experimental group, which was used to study the effect of grade information on student motivation, was representative of grades and perceived grade discrepancy responses of all of the students in the four courses. In addition, while there was some overlap in grade and perceived grade discrepancy (r = .38, df = 109, p < .001), the grades had a balanced distribution for the *below expected* group.

As discussed earlier in the data analyses section, the method of analysis for the first five study hypotheses of grade information and motivation consisted of (a) calculating the mean response for each grade information group across time; (b) conducting a 3 x 2 factorial analysis of variance with repeated measures on one factor to test for significant differences between grade information groups, within participants across time, and possible interactions between group and time; and, (c) graphing the pre- and post-grade information means for each grade information group to discern direction and relative rates of motivation change between groups. In addition, these three steps were done twice for each dimension because two grade information measures, actual grade and perceived grade discrepancy, were used to test these hypotheses.

Hypothesis 1 Intrinsic Goal Orientation

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **intrinsic goal orientation** scores **significantly different** from those scores obtained at the beginning of class.

The pre- and post-grade information means for the three actual grade groups are shown in Table 14. The analysis of variance summary in Table 15 indicates that there was a significant difference between the pre- and post-grade information mean scores for this dimension ($p < .01$), in which the post-grade information mean ($M_{post} = 4.71$) was lower than the pre-grade information mean ($M_{pre} = 4.79$). Each group's intrinsic goal orientation level plotted across time is shown in Figure 3. Although the interaction between group and time was not significant, the *D-F* and *C* groups accounted for most of the decline among the groups across time, while the *A-B* students remained relatively stable.

Table 14. Mean intrinsic goal orientation responses for actual grade groups.

		Time		
Actual grade group	*n*	Pre	Post	Mean
A-B	43	4.83	4.77	4.80
C	48	4.96	4.64	4.80
D-F	20	5.10	4.75	4.92
Mean		4.79	4.71	

Table 15. Analysis of variance of intrinsic goal orientation responses across two time measurements for three actual grade groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	.25	.12	ns
Error between	108	2.16		
Within subjects				
Time	1	2.91	7.00	< .01
Group X Time	2	.51	1.23	ns
Error within	108	.41		

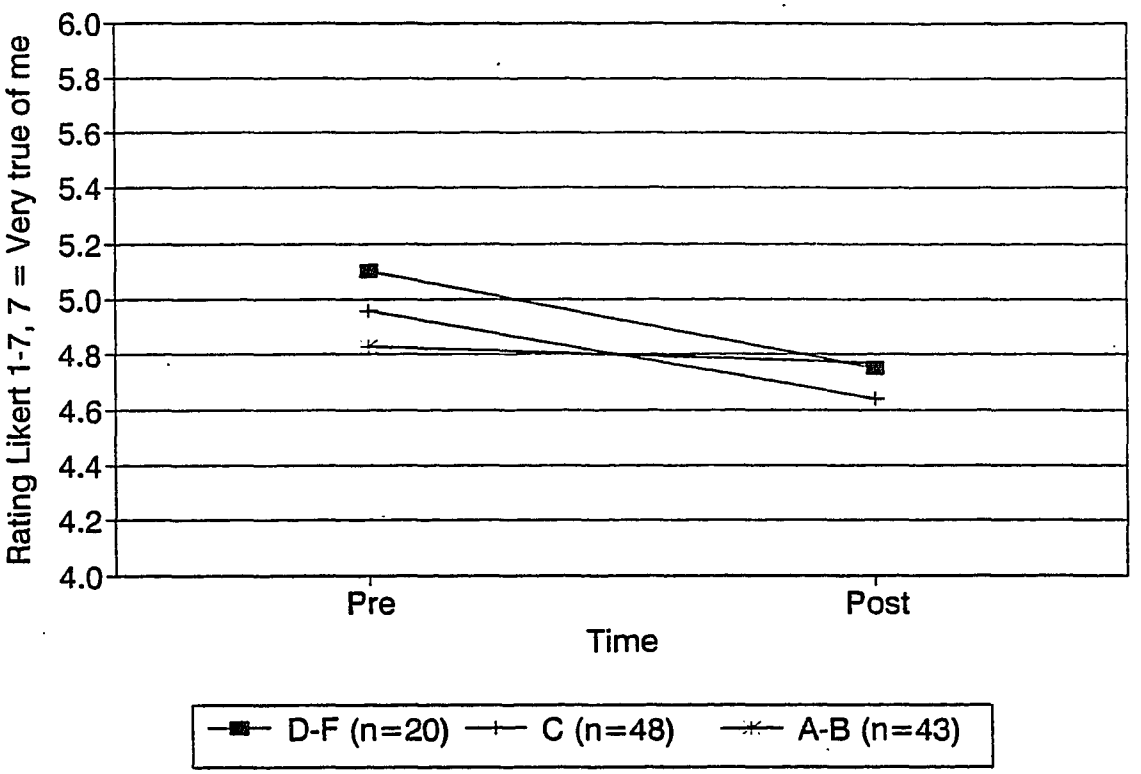


Figure 3. Mean intrinsic goal orientation responses of actual grade groups for pre- and post-grade information time measurements.

The pre- and post-grade information means for the three perceived grade discrepancy groups are shown in Table 16. The analysis of variance summary in Table 17 indicates that there was a significant difference between the pre- and post-grade information means for all groups ($p < .001$). Each group's intrinsic goal orientation level plotted across time is shown in Figure 4. Although the interaction between group and time was not significant, the *below expected* and *above*

expected groups showed more decline than the *same as expected* group, which remained relatively stable across time.

Table 16. Mean intrinsic goal orientation responses for perceived grade discrepancy groups.

Perceived Grade Discrepancy Group	*n*	Time		
		Pre	Post	Mean
Above expected	35	4.82	4.44	4.63
Same as expected	51	4.95	4.87	4.91
Below expected	72	4.92	4.61	4.76
Mean		4.90	4.65	

Table 17. Analysis of variance of intrinsic goal orientation responses across two time measurements for three perceived grade discrepancy groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	1.70	.82	ns
Error between	155	2.08		
Within subjects				
Time	1	4.79	12.14	< .001
Group X Time	2	.59	1.51	ns
Error within	155	.39		

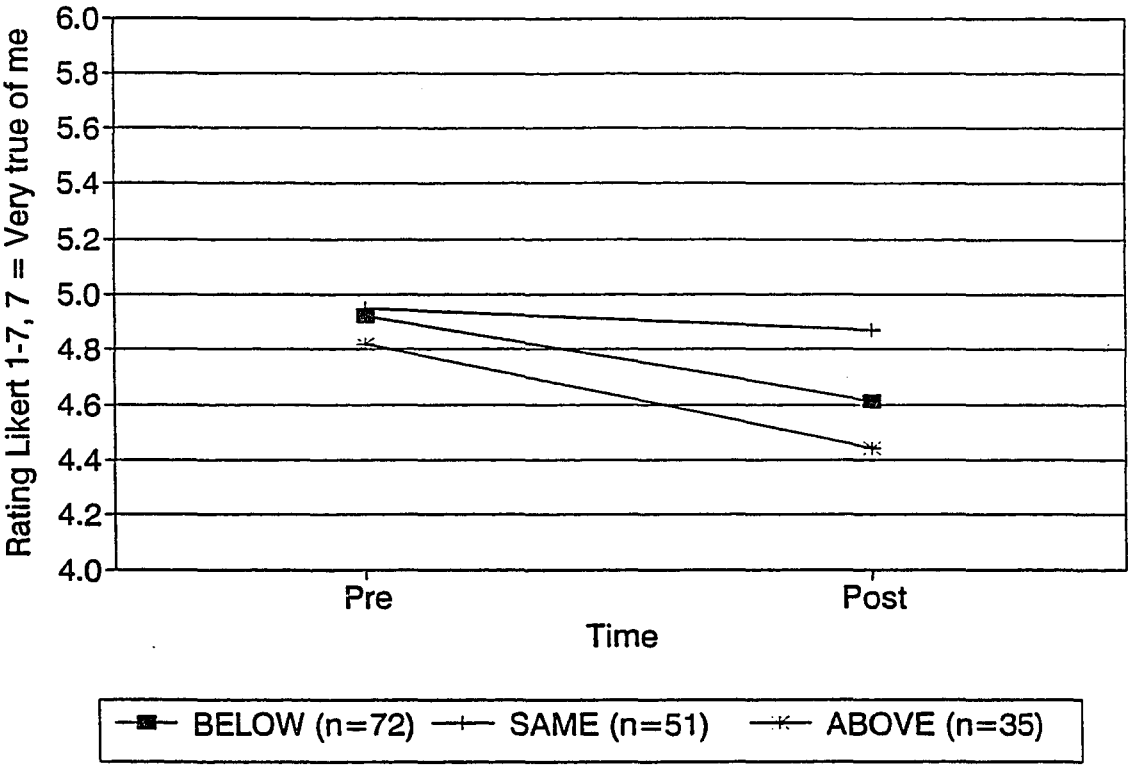


Figure 4. Mean intrinsic goal orientation responses of perceived grade discrepancy groups for pre- and post-grade information time measurements.

The analysis of the grade information groups' intrinsic goal orientation scores supported the hypothesis for this dimension. The actual grade groups and the perceived grade discrepancy groups both had significant differences in means across time. While there was no between-group significant differences for the actual grade and perceived grade discrepancy groups, the decline in pre- to post-grade information means for the lower grade groups and *above*

expected and *below expected* groups showed more decline than did the *same as expected* group, which remained relatively stable. The *A-B* group and the *same as expected* group had motivation dimension levels that remained stable across time.

Hypothesis 2 Self-Efficacy

> After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **self-efficacy** scores **significantly different** from those scores obtained at the beginning of class.

The pre- and post-grade information means for the three actual grade groups are shown in Table 18. The analysis of variance summary in Table 19 indicates that there was a significant difference in both the main effects of time ($p < .001$) and group ($p < .001$). In addition, the interaction of time and group approached significance ($.05 < p < .10$). For the time factor, the average group mean for the post-grade information time ($M_{post} = 4.74$) was lower than that for the pre-grade information time ($M_{pre} = 4.97$). For the group factor, the *A-B* group had the highest self-efficacy level ($M_{A-B} = 5.34$), while the *C* group ($M_C = 4.65$) and *D-F* group ($M_{D-F} = 4.32$) had lower levels of self-efficacy. A Newman-

Keuls test applied to these group means, however, did not indicate significant differences between any two means.

Each group's self-efficacy level plotted across time is shown in Figure 5. Although the interaction between group and time only approached significance, the *D-F* group and the *C* group showed more decline across time than did the *A-B* group, which remained relatively stable.

Table 18. Mean self-efficacy responses for actual grade groups.

		Time		
Actual grade group	*n*	Pre	Post	Mean
A-B	43	5.37	5.32	5.34
C	48	4.78	4.52	4.65
D-F	20	4.61	4.03	4.32
Mean		4.97	4.74	

Table 19. Analysis of variance of self-efficacy responses across two time measurements for three actual grade groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	18.19	7.05	< .001
Error between	108	2.58		
Within subjects				
Time	1	4.22	11.85	< .001
Group X Time	2	.98	2.78	.05 < *p* < .10
Error within	108	.35		

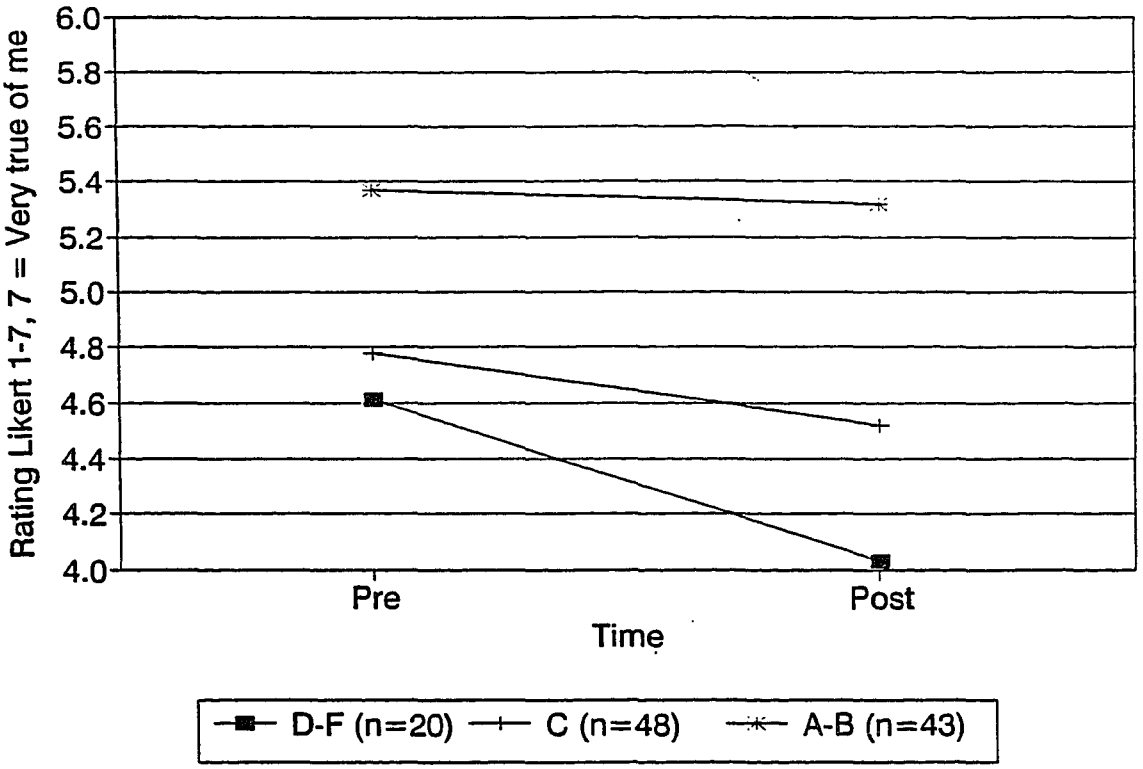


Figure 5. Mean self-efficacy responses of actual grade groups for pre- and post-grade information time measurements.

The pre- and post-grade information means for the three perceived grade discrepancy groups are shown in Table 20. The analysis of variance summary in Table 21 indicates that there was a significant difference in the interaction of group and time ($p < .05$). In addition, one main effect factor, time, approached significance ($.05 < p < .10$). In examining the pre- and post-grade information means of the *same as expected* and *above expected* groups, almost no

changes occurred across time for both groups. It is the *below expected* group that declined sharply, having a mean at pre-grade information time (M_{pre} = 4.93) nearly as high as the *same as expected* group mean (M_{pre} = 5.03) and then a post-grade information mean (M_{post} = 4.54) lower than the *above expected* post-grade information mean (M_{post} = 4.63). A Newman-Keuls test applied to the group means (M_{above} = 4.64, M_{same} = 5.02, M_{below} = 4.73), however, did not indicate significant differences between any two means.

Each group's self-efficacy level plotted across time is shown in Figure 6. The *below expected* group accounted for the significant difference in the group and time interaction. The *same as expected* and *above expected* dimension lines across time were almost parallel.

Table 20. Mean self-efficacy responses for perceived grade discrepancy groups.

Perceived Grade Discrepancy Group	*n*	Time		
		Pre	Post	Mean
Above expected	35	4.66	4.63	4.64
Same as expected	51	5.03	5.01	5.02
Below expected	72	4.93	4.54	4.73
Mean		4.90	4.71	

Table 21. Analysis of variance of self-efficacy responses across two time measurements for three perceived grade discrepancy grade groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	3.65	1.33	ns
Error between	155	2.74		
Within subjects				
Time	1	1.51	3.78	$.05 < p < .10$
Group X Time	2	1.26	3.16	$< .05$
Error within	155	.40		

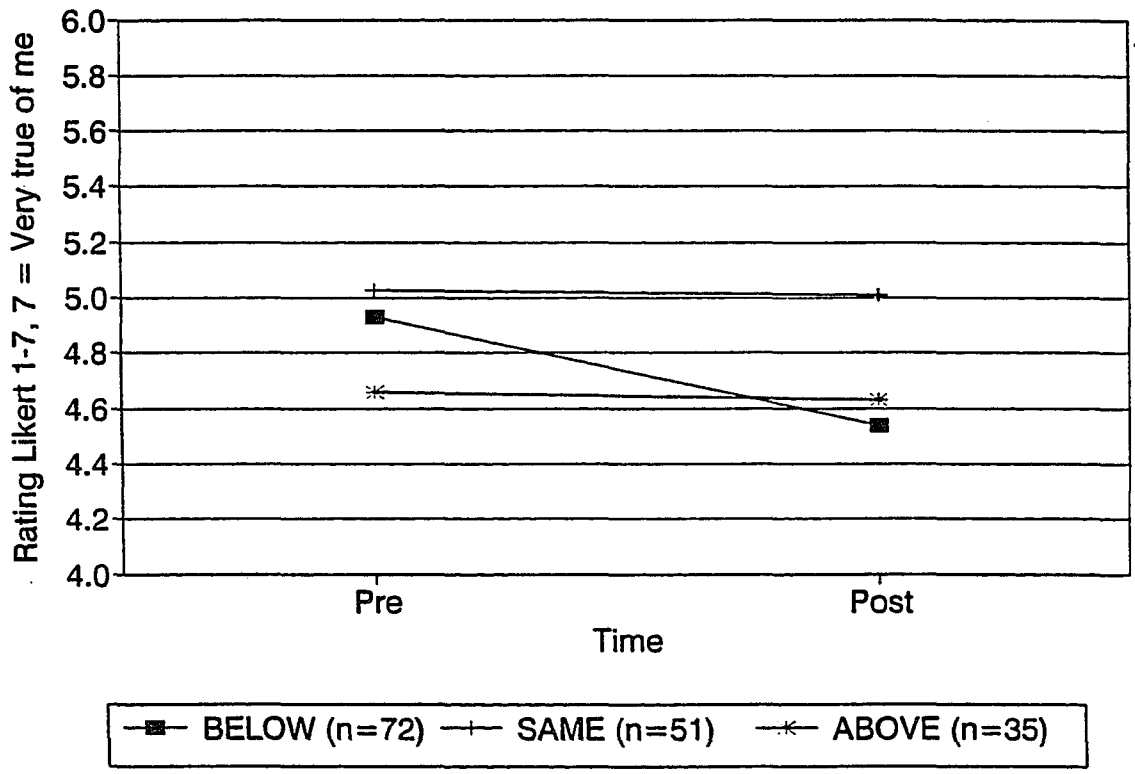


Figure 6. Mean control of self-efficacy of perceived grade discrepancy groups for pre- and post-grade information time measurements.

The analysis of the grade information groups' self-efficacy scores supported the hypothesis for this dimension. For both actual grade and perceived grade discrepancy, there was significant difference in the interaction between group and time, which provides the strongest statistical evidence of change by group over time. The groups that showed the clearest declines in their pre- and post-grade information means were the *D-F* and *below expected* groups. The groups that maintained stability over time were the *A-B* group and both the *same as expected* and *above expected* groups. The *D-F* group and the *above expected* and *below expected* groups had the lowest post-grade information means.

Hypothesis 3 Extrinsic Goal Orientation

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **extrinsic goal orientation** scores **not significantly different** from those scores obtained at the beginning of class.

The pre- and post-grade information means for the three actual grade groups are shown in Table 22. The analysis of variance summary in Table 23 indicates that there were no significant differences for the main effect factors or their interaction. Each group's extrinsic goal orientation level plotted across time is shown in Figure 7. The extrinsic goal

orientation levels for all groups were relatively stable, parallel to each other, and high, with group means ranging from 5.33 to 5.48.

Table 22. Mean extrinsic goal orientation responses for actual grade groups.

		Time		
Actual grade group	*n*	Pre	Post	Mean
A-B	43	5.25	5.41	5.33
C	48	5.51	5.46	5.48
D-F	20	5.40	5.30	5.35
Mean		5.38	5.41	

Table 23. Analysis of variance of extrinsic goal orientation responses across two time measurements for three actual grade groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	.62	.33	ns
Error between	108	1.90		
Within subjects				
Time	1	.001	.00	ns
Group X Time	2	.34	.97	ns
Error within	108	.35		

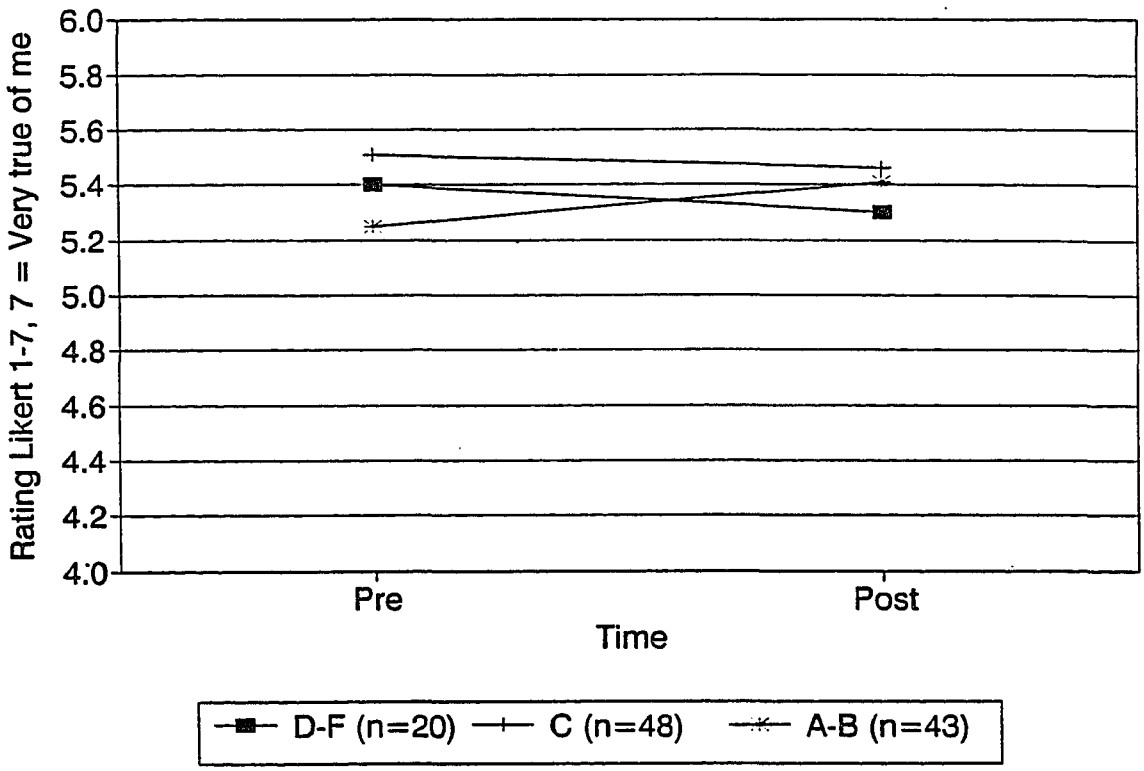


Figure 7. Mean extrinsic goal orientation responses of actual grade groups for pre- and post-grade information time measurements.

The pre- and post-grade information means for the three perceived grade discrepancy groups for the extrinsic goal orientation dimension are shown in Table 24. The analysis of variance summary in Table 25 indicates that there were no significant differences for the time factor and the interaction between group and time. However, there was a significant difference among the groups ($p < .001$). Each group's extrinsic goal orientation level plotted across time

is shown in Figure 8. Like the actual grade groups for this dimension, the perceived grade discrepancy groups' extrinsic goal orientation levels were relatively stable and parallel to each other. However, unlike the actual grade group, one of the perceived grade groups had a much lower level of extrinsic goal orientation. The *same as expected* group had an average across time extrinsic goal orientation mean of 5.0, while the other two groups, *below expected* and *above expected*, had average across time means (M_{below} = 5.63, M_{above} = 5.50) that were clustered and were much higher than the *same as expected* across time mean. A Newman-Keuls test applied to the means indicated that the *same as expected* group had a significantly lower mean than had the *above expected* and *below expected* groups ($p < .05$, in each case). The difference between the *above expected* and *below expected* group means was not statistically significant.

Table 24. Mean extrinsic goal orientation responses for perceived grade discrepancy groups.

Perceived Grade Discrepancy Group	*n*	Time		
		Pre	Post	Mean
Above expected	35	5.53	5.47	5.50
Same as expected	51	4.97	5.04	5.00
Below expected	72	5.64	5.63	5.63
Mean		5.39	5.40	

Table 25. Analysis of variance of extrinsic goal orientation responses across two time measurements for three perceived grade discrepancy groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	12.31	7.35	< .001
Error between	155	1.67		
Within subjects				
Time	1	.00	.00	ns
Group X Time	2	.08	.22	ns
Error within	155	.39		

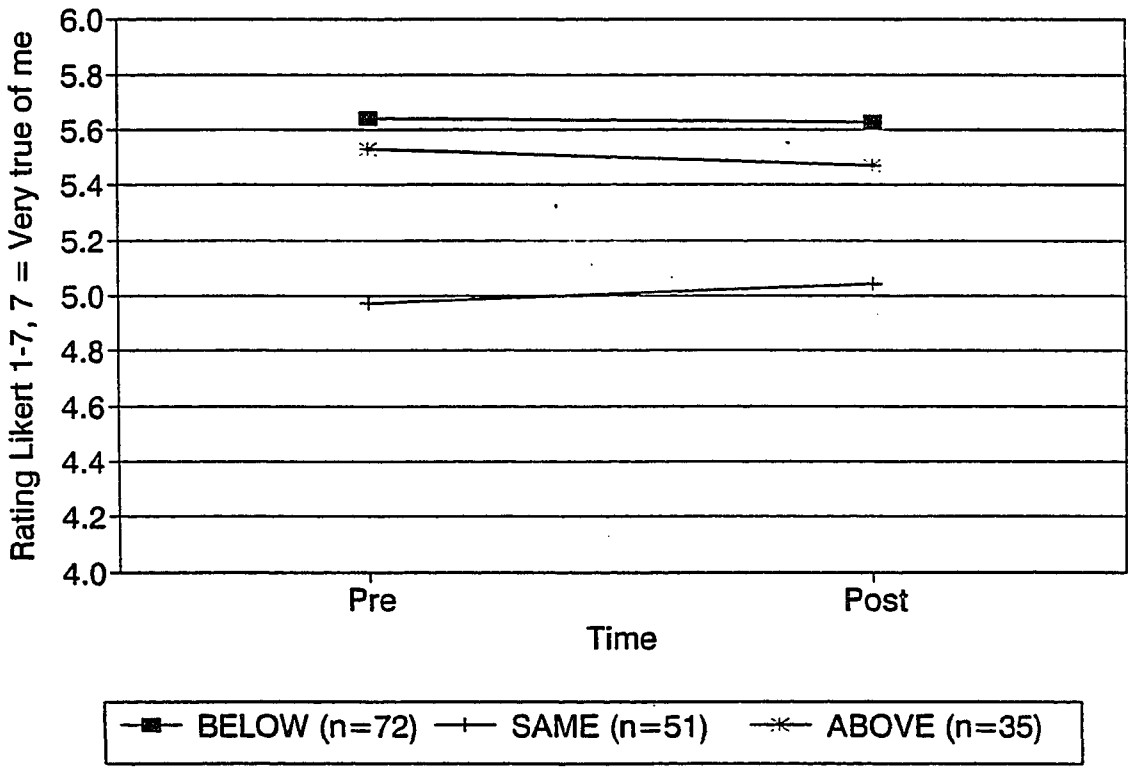


Figure 8. Mean extrinsic goal orientation responses of perceived grade discrepancy groups for pre- and post-grade information time measurements.

The analysis of the grade information groups' extrinsic goal orientation scores supported the hypothesis for this dimension. The actual grade groups and the perceived grade discrepancy groups, including the *D-F* and *below expected* groups, had extrinsic goal orientation levels that were not significantly different over time. In addition, for the actual grade groups there were also no significant differences among the groups or in the interaction of groups and time. However, for the perceived grade group there was significant difference between groups, with the *same as expected* group's extrinsic goal orientation lower than that of the other two groups. There was no significant difference in the interaction of group and time for the perceived grade discrepancy group.

Hypothesis 4 Task Value

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **task (course) value** scores **not significantly different** from those scores obtained at the beginning of class.

The pre- and post-grade information means for the three actual grade groups are shown in Table 26. The analysis of variance summary in Table 27 indicates that there was a significant difference in the time factor ($p < .01$), such

that the average group mean for the post-grade information time (M_{post} = 4.90) was lower than that of the pre-grade information time (M_{pre} = 5.09). Each group's task value level plotted across time is shown in Figure 9. Although the interaction between group and time was not significant, the *D-F* group, and to some degree the *C* group, accounted for most of the decline in task value among the groups across time, while the *A-B* group task value level remained stable.

Table 26. Mean task value responses for actual grade groups.

		Time		
Actual grade group	*n*	Pre	Post	Mean
A-B	43	5.16	5.07	5.11
C	48	5.08	4.89	4.98
D-F	20	5.01	4.61	4.81
Mean		5.09	4.90	

Table 27. Analysis of task value responses across two time measurements for three actual grade groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	1.27	.38	ns
Error between	108	3.39		
Within subjects				
Time	1	2.38	7.37	< .01
Group X Time	2	.34	1.06	ns
Error within	108	.32		

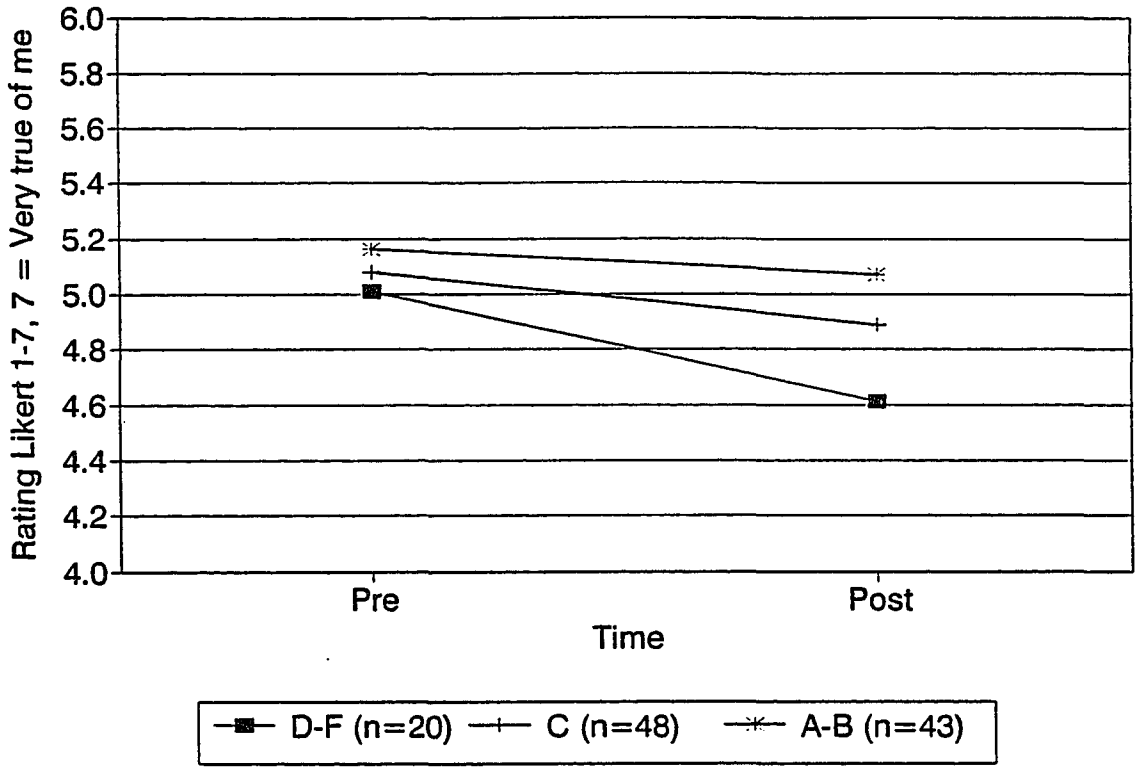


Figure 9. Mean task value responses of actual grade groups for pre- and post-grade information time measurements.

The pre- and post-grade information means for the three perceived grade discrepancy groups for the task value dimension are shown in Table 28. The analysis of variance summary in Table 29 indicates that there was a significant difference between the pre- and post-grade information mean scores for this dimension ($p < .001$), such that the average group mean for the post-grade information ($M_{post} = 4.79$) was lower than that for pre-grade information ($M_{pre} = 5.04$).

Each group's task value level plotted across time is shown in Figure 10. Most of the task value declined in the time factor appeared in the *below expected* and *above expected* groups, while the *same as expected* group remained relatively stable. The rate of task value decline of the *below expected* and *above expected* groups appeared to be similar. In addition, although not statistically significant, the *below expected* group task value level (M_{below} = 5.05) and the *same as expected* group task value level (M_{same} = 4.96) were both higher than the *above expected* group (M_{above} = 4.59), especially at the post-grade information time measurement.

Table 28. Mean task value responses for perceived grade discrepancy groups.

Perceived Grade Discrepancy Group	n	Time		Mean
		Pre	Post	
Above expected	35	4.77	4.42	4.59
Same as expected	51	5.02	4.90	4.96
Below expected	72	5.20	4.91	5.05
Mean		5.04	4.79	

Table 29. Analysis of variance of task value responses across two time measurements for three perceived grade discrepancy groups.

Source	df	MS	F	p
Between subjects				
Group	2	5.04	1.63	ns
Error between	155	3.09		
Within subjects				
Time	1	4.56	13.16	< .001
Group X Time	2	.30	.87	ns
Error within	155	.34		

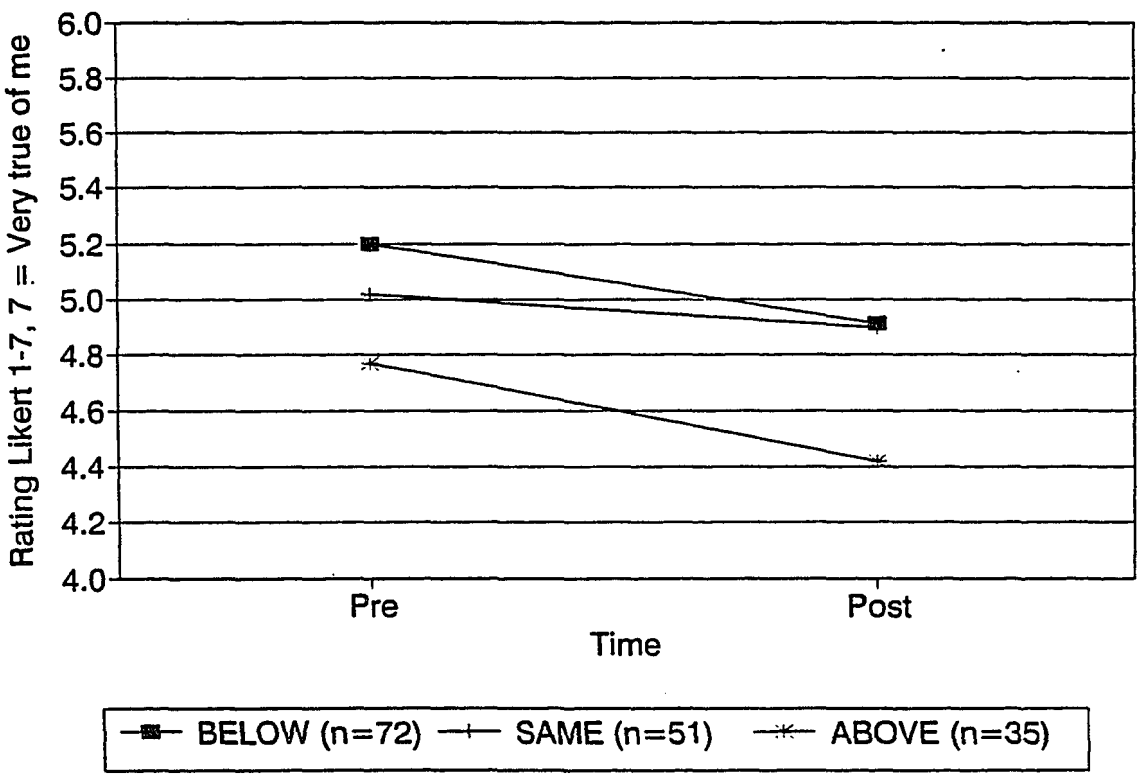


Figure 10. Mean task value responses of perceived grade discrepancy groups for pre- and post-grade information time measurements.

The analyses of the grade information groups' task value scores did not support the hypothesis for this dimension. In both analyses, task value levels showed a significant decline over time. In examining the graphs of the task value levels, it was found that the lower grade groups, *D-F* and *C*, and the *below expected* and *above expected* groups influenced the decline in the across-time motivation levels. In addition, while there was no between-group interaction for both the actual grade groups and perceived grade discrepancy groups, there seemed to be greater differences among groups at the post-grade information time measurement. At the post-grade information time measurement, the actual grade groups were spread out evenly, with the *D-F* students at the lowest level. For the perceived grade discrepancy groups at this time, the *above expected* group was apart from the other two groups at the lowest level. There was no significant difference in the interaction of group and time for both the actual grade and perceived grade discrepancy groups.

Hypothesis 5 Control of Learning Beliefs

After receiving grade information at mid-term, students who receive lower than expected or low grade information will have **control of learning beliefs** scores **not significantly different** from those scores obtained at the beginning of class.

The pre- and post-grade information means for the three actual grade groups are shown in Table 30. The analysis of variance summary in Table 31 indicates that there was no significant differences for the main effect factors as well as their interaction. Each group's control of learning beliefs level plotted across time is shown in Figure 11. The control of learning beliefs levels for all groups were relatively stable, parallel to each other, and high, with group means ranging from 5.42 to 5.58.

Table 30. Mean control of learning beliefs responses for actual grade groups.

		Time		
Actual grade group	*n*	Pre	Post	Mean
A-B	43	5.54	5.63	5.58
C	48	5.42	5.43	5.42
D-F	20	5.65	5.61	5.63
Mean		5.50	5.53	

Table 31. Analysis of variance of control of learning belief responses across two time measurements for three actual grade groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	.86	.59	ns
Error between	108	1.48		
Within subjects				
Time	1	.01	.05	ns
Group X Time	2	.06	.15	ns
Error within	108	.40		

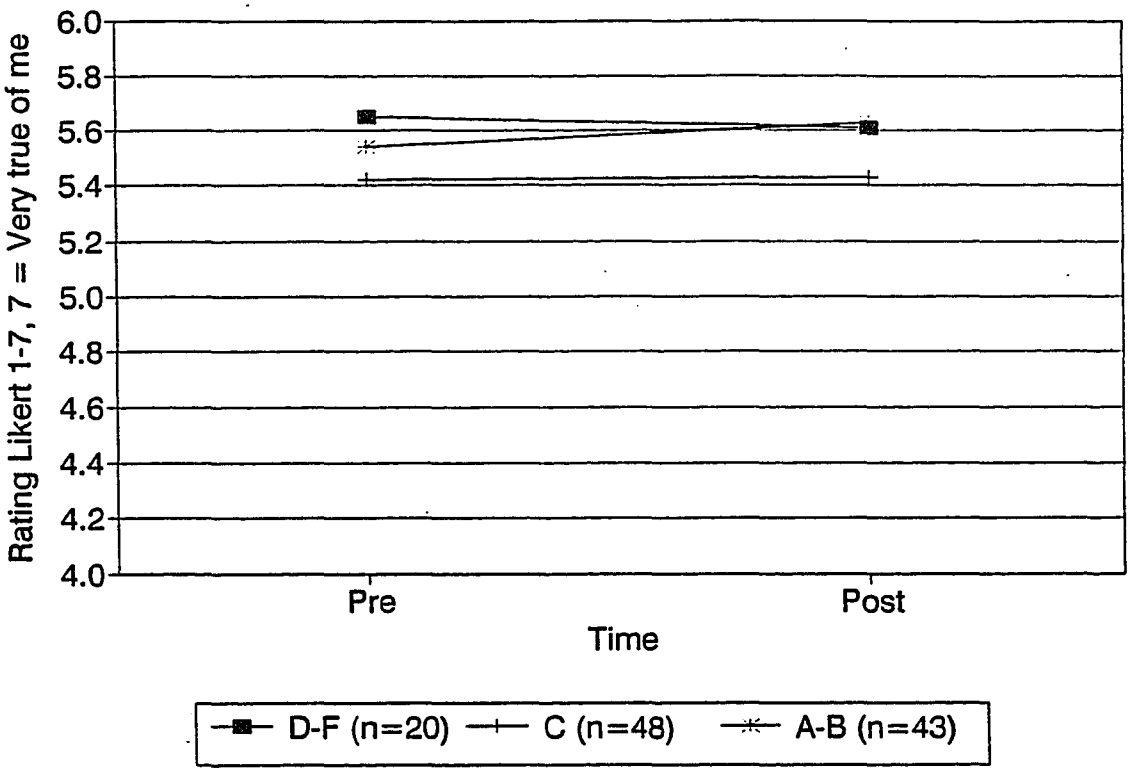


Figure 11. Mean control of learning belief responses of actual grade groups for pre- and post-grade information time measurements.

The pre- and post-grade information means for the three perceived grade discrepancy groups for the control of learning beliefs dimension are shown in Table 32. The analysis of variance summary in Table 33 indicates that there were no significant differences for the main effect factors or their interaction. Each group's control of learning beliefs level plotted across time is shown in Figure 12. Like the actual grade groups for this dimension,

the perceived grade discrepancy groups' control of learning beliefs levels were relatively stable, parallel to each other, and high, with group means even more tightly clustered than the actual grade groups, in a range from 5.33 to 5.45.

Table 32. Mean control of learning belief responses for perceived grade discrepancy groups.

Perceived Grade Discrepancy Group	*n*	Time		
		Pre	Post	Mean
Above expected	35	5.32	5.34	5.33
Same as expected	51	5.47	5.44	5.45
Below expected	72	5.39	5.46	5.42
Mean		5.40	5.42	

Table 33. Analysis of variance of control of learning beliefs responses across two time measurements for three perceived grade discrepancy groups.

Source	*df*	*MS*	*F*	*p*
Between subjects				
Group	2	.32	.21	ns
Error between	155	1.53		
Within subjects				
Time	1	.03	.08	ns
Group X Time	2	.07	.20	ns
Error within	155	.37		

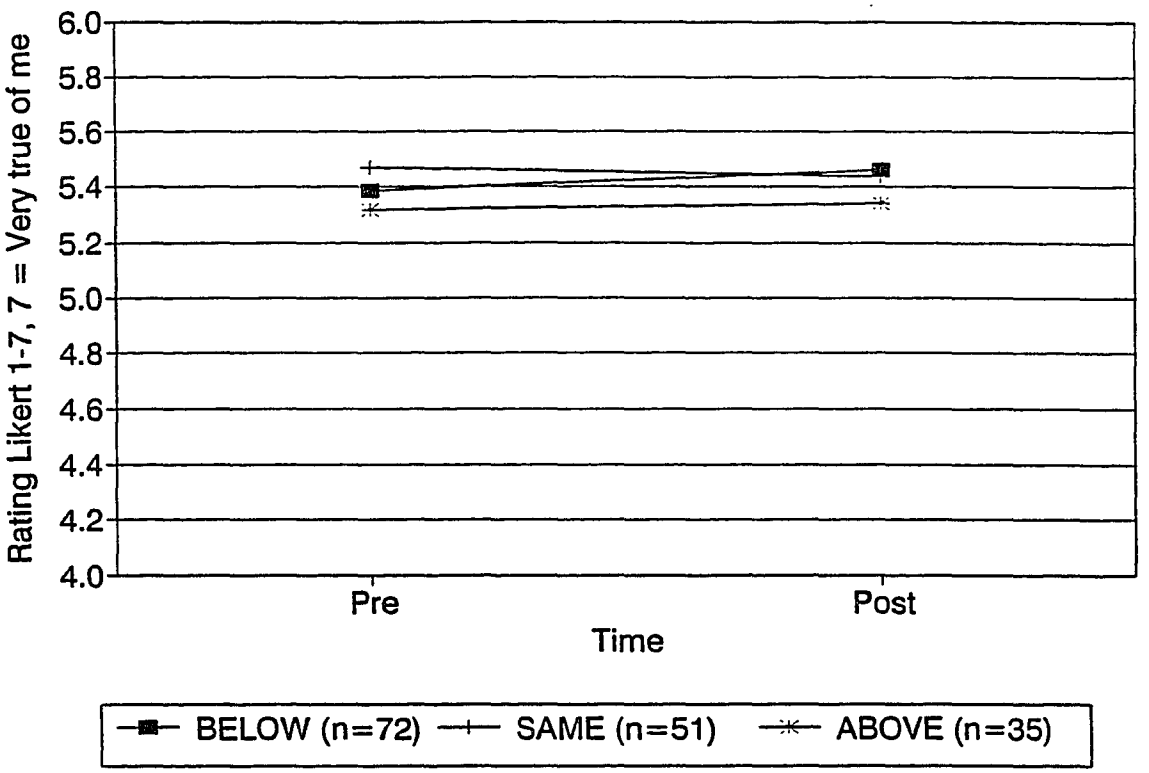


Figure 12. Mean control of learning beliefs responses of perceived grade discrepancy groups for pre- and post-grade information time measurements.

The analysis of the grade information groups' control of learning belief scores supported the hypothesis for this dimension. The actual grade groups and the perceived grade discrepancy groups, including the *D-F* and *below expected* groups, have control of learning beliefs levels that were not significantly different over time. In addition there were no differences in control of learning beliefs levels

between the groups, at either pre- or post-grade information measurements.

Hypothesis 6

Academic newness, as represented by **age** and **generation at a university**, will be significantly and negatively correlated with the change in pre- and post-grade information scores ($score_{post}$ - $score_{pre}$ = $score_{change}$) for the five model motivation dimensions.

As can be seen in Table 34, the academic newness variables were significantly correlated with only one motivation dimension change score. Both age and generation in college were positively correlated with change in pre- and post-grade information scores for the control of learning beliefs dimension. This means that the younger students and those who were first in their family to attend a university were more likely to have had control of learning beliefs levels decline from pre- to post-grade information. In addition, the correlation between age and the extrinsic goal orientation change scores approached significance ($.05 < p < .10$), which suggests that younger students tend to have steeper declines in their extrinsic goal orientation levels than did other students. The correlation between students first in their family to attend a university and self-efficacy also approached significance

(.05 < p < .10), which suggests that first generation students have steeper declines in their self-efficacy levels than do other students. The second semester students showed no significant correlations between age and generation at the university and change in motivation dimension scores.

Table 34. Significant correlations between pre- and post-grade information motivation change scores and academic newcomer variables.

	Semester(s) at the University			
	One		Two or more	
Motivation: Change scores	Age	Gen.	Age	Gen.
Intrinsic Goal Orientation	ns	ns	ns	ns
Extrinsic Goal Orientation	.15*	ns	ns	ns
Task Value	ns	ns	ns	ns
Self-Efficacy	ns	.15*	ns	ns
Control of Learning Beliefs	.21**	.26**	ns	ns

* approach significance .05 < p < .10
** p < .001

Gen. = Generation at the university.

CHAPTER V

DISCUSSION AND IMPLICATIONS

In this chapter, the study results are discussed as they pertain to motivation stability, motivation model development, grade information groups and motivation, and the academic newcomer and control of learning beliefs. The chapter concludes with a discussion of the study limitations, recommendations for future research, and implications for education.

INTERPRETATION OF FINDINGS

Motivation Stability

Of the three stability tests conducted on the Time 1 and Time 2 scores of the stability test group, only one clearly supported the stability of all motivation dimensions. For each motivation dimension, the test of correlated variances showed that the variances between the Time 1 scores and Time 2 scores were not significantly different. However, for the test-retest reliability correlations, two of the dimensions had relatively low correlations (self-efficacy, r = .53; control of learning beliefs, r = .59) indicating that participants were responding in different ways for each administration. For

the repeated measures *t* test of the Time 1 and Time 2 means for each dimension, two dimensions (task value and intrinsic goal orientation) had means that were significantly different and the self-efficacy dimension had means that approached significance in their differences. In addition, there was an overall decline in the means for all dimensions over time, which suggests a systemic shift in student motivation that occurs naturally as the semester progresses.

There have been few studies of shifting motivation levels during a semester. Studies of motivation over time have examined developmental changes from the primary to secondary years (Stipek & Mac Iver, 1989) or on specific phases of involvement in an academic task (Hagen et al., 1992; Tannen, 1985). Pintrich (1989) obtained measurements of college students' motivation at the beginning and end of the semester. However, the focus of Pintrich's study was to investigate the causal links among motivation, cognition, and achievement variables, in which the motivation scores were used as a correlate to grades and cognitive strategy usage.

However, Deci et al. (1981) did find that primary school student perception of classroom structures as they pertain to motivation crystallized after five weeks. While parallels with college-level students must be drawn cautiously, not only because of the difference in age but in teacher and classroom contact hours, there may be a period

in which students need to make sense of their academic environment, whether in primary school or college. As students increase their understanding of the course material as the semester progresses, they may realize that it is much more complex than they had originally perceived, which may result in their reporting lower self-efficacy scores at a later measurement. For example, students in the History course were getting feedback on their assignments in the discussion labs, which provided them with early information on the level of difficulty of the course material. This increasing understanding of the course and course material may also affect the task value dimension, in which the course importance, utility and interest are reassessed.

In addition, college students undergo developmental changes (Perry, 1970) and are usually deciding on a major during their freshman and sophomore years. While these changes occur over semesters and the stability test period was five to nine weeks, perhaps some of the developmental and major decision changes had some effect on the students' perception of course usefulness.

Two study design features also might have influenced the decline in task value and intrinsic goal orientation. The first factor is the proximity of the mid-term examination and the Time 2 questionnaire administration, which took place the class period prior to the examination. The students might have seen the examination as a looming

presence in which their desire to "do well" could have diminished the interest factor in the task value dimension and the mastery and challenge approach to learning of the intrinsic goal orientation dimension. The reason the Time 2 administration took place as close in time as possible to the examination was to provide the maximum time to test the stability of motivation dimensions. However, the class period prior to the examination may not have been the best time because of the possible emotional confusion occurring in students, especially with a "test-like" questionnaire. A better time might have been a minimum of two class periods prior to the examination, which would have provided a good length of time to test stability, yet avoided much of the pre-examination rise in anxiety.

The second study design factor might have been the lack of choice in the students' selection of courses. The History course is a university core course requirement, while the other courses are required introductory courses for majors in the fields the courses represented. This lack of choice might have caused students to judge the courses more critically in terms of usefulness than if the courses were more of the students' own choosing.

Motivation Model Development: Situation-Specific and Global Dimensions

Of the five hypotheses concerning stability of the motivation dimensions as they pertained to grade information, four were supported by the study results and one was not. Table 35 below compares the hypotheses predictions and results.

Table 35. Comparison of hypotheses predictions and study results on motivation dimension stability.*

	GLOBAL	SITUATION-SPECIFIC
Predicted		
	Goal Orientation: Extrinsic$_{Value}$	Goal Orientation: Intrinsic$_{Value}$
	Task Value$_{Value}$	Self-efficacy$_{Expectancy}$
	Control of Learning Beliefs$_{Expectancy}$	
Results		
	Goal Orientation: Extrinsic$_{Value}$	Goal Orientation: Intrinsic$_{Value}$
	Control of Learning Beliefs$_{Expectancy}$	Self-efficacy$_{Expectancy}$
		Task Value$_{Value}$

* Dimension in bold indicate where results differ from prediction.

Whether a dimension was theoretically a value or expectancy dimension did not seem to be a predictor of whether a dimension operated in a global or situation-specific manner for this study's sample. One expectancy dimension was global and the other, situation-specific; one value dimension was global and the other two were situation-specific.

In explaining why certain dimensions are global, it may be that certain long-term environmental forces shaped these motivation dimensions. Education becomes more formal during the secondary educational levels (Stipek, 1993) and is strongly competitive and normative in college (Tierney, 1992), which creates an entrenched extrinsic goal orientation in students by the time they are in college. Extrinsic goal orientation, as a motivation dimension, may become resilient to even a strong environmental force such as discrepant grade information.

In addition, college students are a self-selected population of successful learners, ones who have achieved academic success through their own efforts. Belief that success is due to one's own effort (the control of learning beliefs dimension) was found to be resistant to the effects of grade information. Therefore, it may be that these dimensions are global in this study because of the college population; in another population, and again measuring the

effect of grade information, a different global-situation-specific configuration might be found.

In examining the situation-specific dimensions, the one dimension that was not predicted to be situation-specific was the task value dimension. It may be that students reassess the utility and importance of a task much more readily than expected. In addition, task interest may quickly evaporate when students do not live up to their own or other's expectations and the possibility of academic probation or loss of financial aid may displace interest in the course. Contrary to both the Pintrich motivation model and this study's revised model, task value operated as a situation-specific dimension in the present study.

Intrinsic goal orientation, self-efficacy, and task value dimensions shifted with grade information; this was seen primarily in those students receiving lower grades and those receiving grades below their expectations. Two factors common to the three situation-specific dimensions found in this study seem to confirm, *post hoc*, the study's finding that these three dimensions are situation-specific: (a) The situation-specific dimensions seem to be more closely related to the task than are the global dimensions, and (b) There appears to be causal relationships between the situation-specific dimensions and cognitive strategy use and achievement.

The first common factor is that these situation-specific dimensions are more task-based than are the global dimensions. The task value dimension is obviously task based as it measures the importance, utility, and interest of the task to the student. The intrinsic goal orientation dimension measures the degree to which students approach learning from a mastery and challenge perspective or how task-involved they are (Nicholls, 1988). The self-efficacy dimension measures student expectation for success, which is based on a simultaneous judgement of their ability and the task difficulty. The global dimensions, on the other hand, are not as task-based. By definition, extrinsic goal orientation concerns performance and what others may think rather than challenge and mastery of the task. The control of learning belief dimension measures attribution to effort for success, something that has shown to be developed and internalized over a long period of time.

The second common factor that the three situation-specific dimensions have is that researchers have found that these three dimensions have high correlations with final grades (Pintrich et al., 1991). For the three situation-specific dimensions, correlations with final grades ranged from .22 to .41, while for the two global dimensions, the correlations were much lower (r = .13, .02). In addition, researchers have found that these situation-specific dimensions were strongly related to cognitive learning

strategies that require deeper processing, such as elaboration and metacognition, while the global dimensions had weaker relationships with these strategies (Pintrich & Garcia, 1992). The relationship between the situation-specific dimensions found in the present study and the relationship found in other studies between these dimensions and both final grades and strategy usage are shown in Table 36.

Table 36. Comparison of study situation-specific dimensions, final grade correlations, and strategy use.

Study results: adjusted model	Correlation with final grade (Pintrich et al., 1991)	Relation with strategy use (Pintrich & Garcia, 1992)
Situation-specific		
Self-Efficacy	.41	elaboration; self-regulatory strategies; effort, time and study management
Intrinsic Goal Orientation	.25	elaboration, organization, self-regulatory strategies
Task Value	.22	elaboration, organization, self-regulatory strategies
Global/stable		
Control of Learning Beliefs	.13	(weak relationship with cognitive and resource management strategies)
Extrinsic Goal Orientation	.02	(weak relationship with cognitive strategies, except interaction with intrinsic goal orientation)

Like this study, these Pintrich studies have college students as their population and measure motivation using the MSLQ. These studies show that certain motivation dimensions are related to the usage of positive, deeper processing learning strategies and metacognition, perhaps ultimately influencing the student's final grade. In light of the findings of the Pintrich studies, this study's results raise an intriguing question regarding the situation-specific dimensions that are related to positive strategy use. Is this relationship potentially beneficial because these dimensions might be positively manipulated and thereby increase deeper processing strategy use or is this a possible obstacle to encouraging deeper processing strategy usage because the strategies are driven by shifting, and perhaps difficult to predict, motivation dimensions?

Grade Information Groups and Motivation

The study hypotheses that predicted the situation-specific or global nature of the five motivation dimensions used two grade information groups: students who received lower than expected grades and students who received low grades. There were two reasons for using both groups of students in testing the hypotheses. The first reason was that the number of students who would eventually allow their grades to be used in the study could not be predicted. An

alternative measure was needed. The second reason was that two convergent measures of grade information would strengthen the study findings. As it turned out, 70% of the experimental group (n=111) provided grade release forms and all those in the experimental group answered the perceived grade discrepancy question. Consequently, the two converging grade information measures were used to assess the impact of grade information on student motivation.

In the study hypotheses results, the low grade group was initially defined as those students who received a "D" or "F," which was called in this study the *D-F* group. The "lower than expected" students were defined as those who said that they received grades below and quite a bit below what they had expected, which was called the *below expected* group. In the five motivation dimension hypotheses, both grade information measures converged, supporting the same four hypotheses and failing to support one (hypothesis 4: task value).

While the two particular measures converged well in the data analysis, the *C* group (those students who received a "C" grade) could have been included in the hypotheses grade measure of students who received a "low grade." In the situation-specific dimensions, the *C* grade group's decline in motivation from pre- to post-grade information time was similar to that of the *D-F* group.. Together, both of these grade groups accounted for the decline in motivation in the

situation-specific dimensions because the *A-B* group had motivation dimension means almost unchanged across time. Generally, receiving a "C" grade would not have the same impact on a student's cognitive-motivation system as would a "D" or "F" grade, and this was evident by the fact that the decline in motivation means were less steep than that of the *D-F* group. However, it makes sense to consider the *C* grade group as part of the low grade students mentioned in the hypotheses, not only because of the decline in motivation levels but because most students consider a "C" grade as a low grade rather than "average," especially in a normative college environment. In addition, the *below expected* group consisted of 57% *C* students and 23% *D-F* students, which may account for similarity in the *below expected* group's motivation dimension decline and that of the low grade groups, i.e., students who receive grades "C" and below.

Therefore, it can be argued that these two grade information types, the *below expected* students and the expanded definition of students who receive "low grades," i.e. *C* and *D-F*, are similar and their declining levels from pre- to post-grade information times for the situation-specific dimensions can be discussed together.

The single letter grade generates strong ability attributions (Stipek, 1993), leading to such self-statements as "I received a 'D' on this exam so I am a 'D' student." The problem of single letter grades shifts the nature of the

classroom motivation to one of more performance (Jagacinski, 1983). It appears that this effect occurs here. Students who received low grades or lower than expected grades may have shifted their focus away from mastery and challenge to one of obtaining a better grade and performance. In addition, some students may have felt discouraged to the point of "giving up" on the course, which would cause a sharp decline in intrinsic goal orientation.

In the stability test, it was speculated that the task value dimension declined because as the semester progressed students became more aware of the task and either reassessed the usefulness of the course or found the material too complex, which might have depressed their interest level in the course. Similarly, the low grades and grades below what they had expected perhaps were a trigger for students to reassess their long-range goals and their ability in the course, and these students may have concluded that the course was not as useful as they had originally perceived it to be. These students might have also devalued the importance of the course as a way to protect self-worth, by rationalizing, after doing poorly, that the course was never that important to them.

The relationship between grades and self-efficacy is strong. Stipek and Mac Iver (1989) note that as children progress through the grade levels individual differences in performance are emphasized. A shift toward whole-group

instruction and uniformity in assignments occurs. The opportunity for social comparison increases, as well as its importance. Grading becomes more rigorous, which when combined with this social comparative task structure, makes it increasingly difficult for the average- and below-average students to maintain high perceptions of competence. The lower grade group and the *below expected* grade group both steeply declined in self-efficacy, indicating the strongest effect by grade information of the three situation-specific dimensions. Students might have had to adjust their expectancy for success and confidence in their ability to master the material.

In summary, the low grade and *below expected* students declined in intrinsic goal orientation, task value and self-efficacy. The impact of negative grade information on these students' motivation levels was fostered by a uni-dimensional class, in terms of task and evaluation, which may have directed students away from a mastery approach to one of performance and highlighted the link between grades and perception of competence. In addition, the students' developmental changes in the freshman year could have caused the reassessment of the utility of the course in terms of their goals and needs. Some students may also have been discouraged due to a fragile sense of self-efficacy, which may have caused them to give up on the class. In addition, as the stability tests indicated, students could also have

had a naive awareness of the course material, which becomes more precise after they received their examination grades.

While the low grade and *below expected* groups were the main focus of the study hypotheses, there was an interesting finding concerning the *above expected* group. In two of the three situation-specific dimensions, intrinsic goal orientation and task value, the *above expected* group of students had motivation declines as steep as the *below expected* group and were much lower in the actual pre- and post-grade information scores as well. What caused the *above expected* group of students to have their mastery and challenge approach to learning decline, even with a high grade? These students when obtaining a grade higher that expected, e.g. an "A" instead of a "C," may have become more focused on grades and maintaining the grade, which reduced their mastery and challenge approach to learning. Another possibility is that the course was becoming less challenging to the students. Studies have shown that to have high intrinsic motivation and engagement in tasks, the task should provide optimal challenge and be moderately difficult (Csikszentmihalyi & Nakamura, 1989). These students who received grades above what they expected might have felt that the course material was now too easy and posed less of a challenge, hence the decline in intrinsic goal orientation.

That the level of task value motivation was much lower for those students whose grades exceeded their expectations is quite surprising. As discussed earlier, more than 60% of the students in this *above expected* group received a grade of "A" or "B." Perhaps these students were finding the course less important because they could now get by with less effort, or that the interest in the course declined because it no longer presented a challenge to them. It is interesting to note that in the self-efficacy dimension, the *above expected* group had little or no decline, verifying the strong relationship between grades and self-efficacy.

In summary, students who received grades that were above what they had expected reacted much like students who received grades below what they had expected, except in the self-efficacy dimension. This *above expected* group actually had lower levels of motivation, both in steepness of the decline from pre- to post-grade information time and actual motivation scale levels, than those of the other discrepancy groups. This *above expected* group may have perceived a need to focus on the grade because of the desire to preserve the high grade, experienced a loss of challenge and hence mastery in the course, or judged the course to be of less importance because less effort or attention was demanded for the course. It could also be that receiving a grade above what they had expected only reinforced already low levels of intrinsic goal orientation and task value, which were lower

than those of the other discrepancy groups at the pre-grade information time.

Getting an "A" or "B" grade can cause a decline in intrinsic goal orientation and task value as much as a "C" or lower grade. The common assumption that the "A" student is the "best" student, which is often made at the university level, may not necessarily be true, especially if the best student is seen as one who has an intrinsic goal orientation and strong task value motivation.

The deviating pattern of the *above expected* group raises the question that perhaps there is an underlying construct for the perceived grade discrepancy groups that cuts across the individual dimensions. One construct might be the naive awareness of the course and materials that certain students have. Perhaps these students do not discern instructional cues, such as the instructor indicating a difficult content area or have only a vague understanding of the pace and rigor of the course. This naive awareness of the course could cause artificially high motivation scores during the pre-grade information period. It could be as well that the grade information that follows, whether above or below what was expected, adjusts student motivation levels to the accurate or "normal" level for the student.

The second construct might be the high extrinsic goal orientation levels reported by both *above expected* and *below expected* groups, as compared to the group that received the

grade they had expected. The extrinsic goal orientation dimension was the only dimension to show significant differences between the discrepancy group means. This is an interesting finding insofar as one interpretation might be that those students who are most concerned about their grades and performance are least able to predict their grade; or conversely, because they are least able to predict their grade, they may be more concerned with their grades and performance. As shown in Figure 13 the global, stable quality of extrinsic goal orientation may be the defining quality of the *above expected* and *below expected* groups, and may be related to their instability in the situation-specific dimensions.

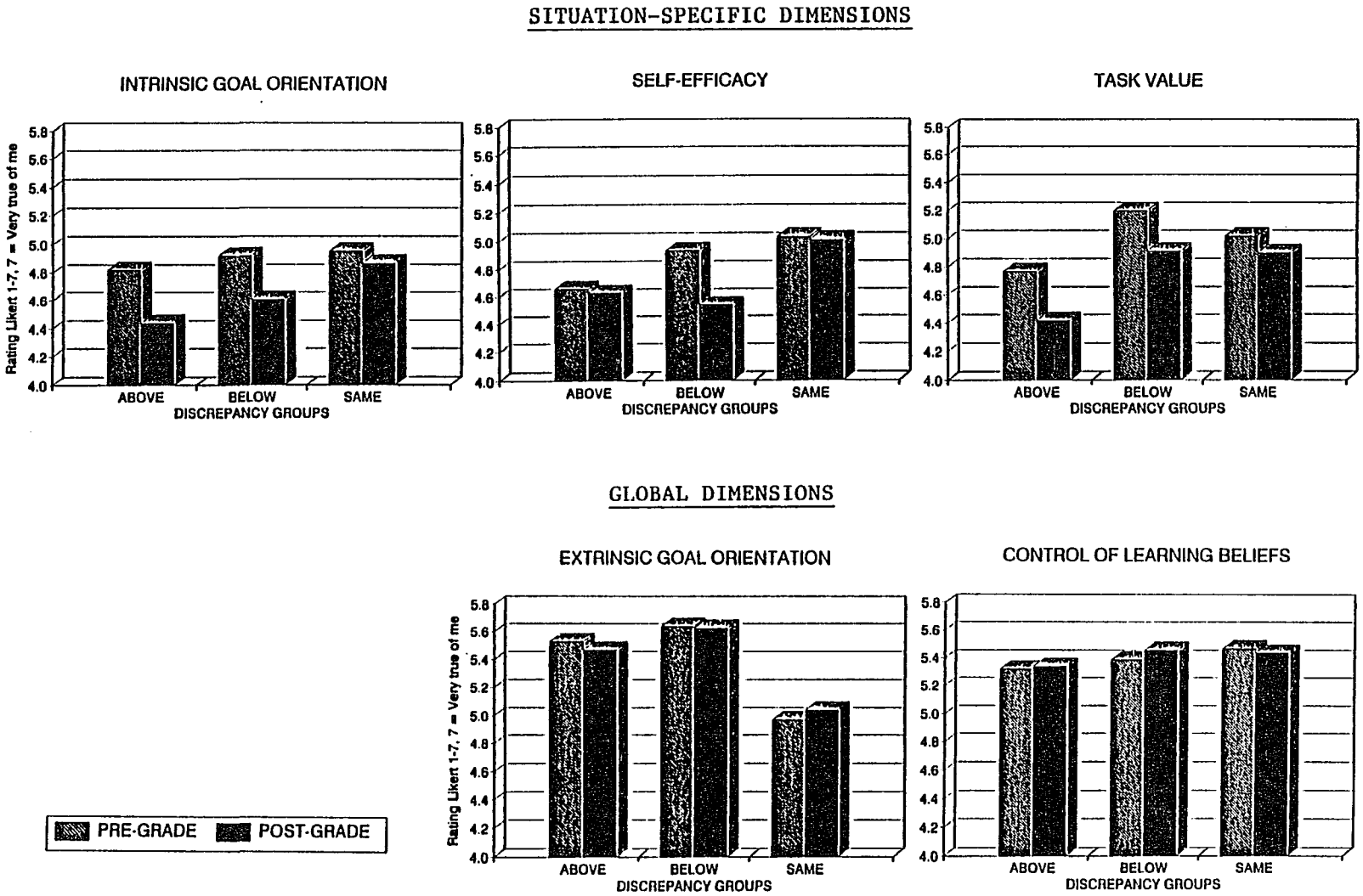


Figure 13. Comparison of perceived grade discrepancy groups by dimension.

Perhaps this strong extrinsic goal orientation contributes to the decline in the intrinsic goal orientation for both the *above expected* and *below expected* groups. The decline in task value for the *above expected* and *below expected* groups could also be related to the high extrinsic goal orientation. Students who are performance oriented and concerned with others' evaluation are not concerned with the task itself except as a means to an end. Hence, interest in the material and its importance to personal needs and long term goals are also not as critical.

Students who have an extrinsic goal orientation focus on others or normative standards, which results in attention being directed away from the task and their own skills (Nicholls, 1984). The students may have a reduced ability to judge how much they are learning and how well they will perform on an examination. The importance of knowing and predicting grades may be linked to the idea of students' receiving meaningful feedback and information on their performance. If students obtain the grade that they expected then in this sense the information is "rich"; feedback on performance lets them know that their skill or effort is at the level of the task or that more effort is needed for a higher grade. However, if the grade is not what was expected, then the grade information is "poor," and students may be left confused in terms of whether it was ability or

effort, or external factors such as luck or instructor bias, that resulted in the grade received.

Extrinsic goal orientation was also a stable dimension across time for all groups. This dimension could have been forged over a long period of time (Tinto, 1992; Stipek, 1993) and will not be easily changed due to the more normative classroom structures in the higher grades.

Academic Newcomer and Control of Learning Beliefs

The first year experience in college is a critical one (Astin, 1993) and adjusting to a college experience based on family and cultural background can add to the difficulty (Tierney, 1992). In this study an exploratory look was taken at how age and being first in the family to attend a university ("first generation") were related to motivation level changes after grade information was received. It was found that younger students and first generation students were more likely to show a decline in control of learning beliefs levels from pre- to post-grade information times.

This is an interesting finding because the control of learning beliefs motivation dimension is one of the most stable dimensions in the study model for all grade information groups. The stability could be explained by the fact that effort attribution may be formed over a long period of time and therefore is not susceptible to a single

failure. In addition, college students are a self-selected group, with effort attribution for academic tasks probably much higher than for non-students. Therefore, even if they fail at a task, they know that only individual effort will lead to success.

Students who come from high school or are first generation students perhaps start off with an unrealistic feeling of personal control, that whatever they put effort into they will succeed. Harter and Keller (1980) noted that first-term freshman placed greatest responsibility of low grades on their own lack of motivation and learning strategy use. This heightened sense of effort attribution may be due to the "naive awareness" factor discussed earlier.

This naive awareness factor might also explain the two other correlations that occurred but were short of statistical significance ($.05 < p < .10$). The first correlation indicated that younger students showed a sharper decline in extrinsic goal orientation. These younger students perhaps may be singular in their approach to obtaining "good grades" at the beginning of the semester but may find that the university is not as normative as first perceived. The second correlation indicated that being a first generation student was related to a sharper decline in self-efficacy. These first generation students, possibly without a sibling or parent to talk about the rigor of university work, overestimate their ability to master the

course work or have a fragile sense of this ability. Again, the naive awareness factor may be contributing to the higher levels of extrinsic goal orientation and self-efficacy reported by younger and first generation students.

In the correlation analysis using the students who were at the university for two or more semesters, no significant correlations occurred between the motivation change scores and the academic newcomer variables, age and first generation at a university. This suggests that the first semester is a particularly vulnerable time for these students, but once past the first semester, their motivation levels perhaps reflect more normal states.

LIMITATIONS OF STUDY

In this study, a quasi-experimental design was used, in which some of the controls of a laboratory experiment were applied in a field setting. A stability test group was established that measured motivation dimensions at the beginning of the semester to just prior to the first mid-term examination in order to determine the direction and intensity of any changes in motivation dimensions. However, the stability test results indicated that two of the five motivation dimensions had significant differences between their Time 1 and Time 2 means. In addition, there is a period of one to three weeks between the Time 2 measurement

and the Time 3, post-grade information measurement used for the experimental group. During this time other factors besides grade information could be at work that might have caused the decline in the experimental pre- and post-grade information motivation levels, such as grade information from other courses students were taking. In addition, the week in which students received their grade information varied from six to 10 weeks after the semester began, which would add further time for other factors to intervene.

An alternate design might have been to find a course with another section but with different exam schedules so a true control group could be established, using the course with the exam that occurs after the treatment group's post-grade information measurement. However, the initial differences in student motivation levels in the two sections is a problem that would have to be addressed.

While no control group was used in the study, referent groups were used as a point of comparison for the low grade and *below expected* group motivation levels. For the actual grade groups, the *A-B* group became the referent group. For the perceived grade discrepancy group, the *same as expected* group became the referent group. These two groups had pre- and post-grade information means that remained fairly stable in each of the motivation dimensions, in part because they received either no new grade information or grade information that was generally positive.

Having the experiment conducted in the field also hindered control on group size and to some extent type of students selected. The attrition rate of the stability test group was 71% and for the experimental grade groups, 77% (actual grade group) and 67% (perceived grade discrepancy group). While fluctuating attendance and enrollment might have contributed to some of the attrition, the primary reason for the high attrition rates was that students were not providing their social security number or student identification number on the answer sheet at all three questionnaire administrations. One reason for this could be the students' reluctance in providing these identification numbers because of concerns over privacy. Another reason is that students found it cumbersome to write in a nine-digit number and fill in the corresponding bubble code on the computer scan answer sheet for each questionnaire administration. Perhaps issuing temporary student identification numbers for the purpose of the study might have ensured a greater number of students for the study sample.

The number of students in each of the grade groups varied. The *D-F* group in the actual grade analysis consisted only of 20 students, while the other grade groups had about twice that number. The check on the percentage grade distribution for the total students who took the mid-term examination or project showed that the study experimental

group did have a smaller representation of "D" students and an overrepresentation of "A" students. It makes sense that students with higher grades would be more willing to allow their grades to be used for a study, as opposed to someone with lower grades. However, for the other grade information measure, the proportion of students in each of the original five perceived grade discrepancy levels, before they were collapsed into three levels for analysis, was very similar to that of the experimental group's five perceived grade discrepancy levels in spite of the high study sample attrition rate. While both the actual grade groups and the perceived grade groups were used as convergent measures in testing the first five hypotheses and seem to be representative of the total course population, the two groups do not have exactly the same members. Therefore comparisons between the two grade groups, beyond convergence in supporting the hypotheses, should be made with this in mind.

The selection of courses in the study represented a range of disciplines but were similar in that they were all large introductory courses. However, while a course from four very different disciplines was selected, the number of students who ended up in the final study sample was not equally proportional from each discipline. History was the most overrepresented with 43.6% of the total sample and Sociology was the most underrepresented, with 12.8% of the

total sample. While the students were mainly freshman and sophomores taking the university core courses, the fact that History is a required university core course may have caused some overall lowering in motivation dimension levels. However, the way the groups reacted differently to grade information should not be affected. That is, even if the overall level of the motivation dimensions were lower in the History course, the perceived grade discrepancy groups would still differentiate themselves in the same way as in the other courses. While the sample sizes were uneven and too small to make comparisons in motivation levels between courses in this study, future studies might be designed to examine course variables such as choice in selection.

The different methods of examination and grading was another factor that was not controlled. Two courses used multiple-choice examinations and the other two courses, an in-class essay examination and a take-home written project. These diverse types of examination might cause different feelings of competency for the course. A student poor in essay writing would feel less competent than if the method of examination had been a multiple-choice exam. However, the number of students who took essay examinations and the number who took multiple-choice examinations were about the same. The Sociology course, with 13% of the students, gave the take-home written assignment. Assuming students are equally fearful of essay and multiple-choice examinations,

then this factor should not be a concern. However, in talking with the instructor of the History course involved in the study, it may be that essay examinations, which demand more critical thinking and create greater time pressure, may be perceived as more difficult tasks by more students than multiple-choice examinations which require rote recall under time pressure. The Sociology assignment does require critical thinking through a written assignment, but does not have the compressed time pressure of the in-class essay writing. Pintrich and Garcia (1992) in their study of college students did use courses from different disciplines as well as courses with different grading formats. They did not consider this a problem in the measurement of motivation. In their study they used the grades from these different methods of assessments to test the MSLQ, standardizing the grades before analysis.

The weight of the grade in terms of final class grade also varied from course to course and could not be controlled. In the Chemistry course, the examination was worth 20% of the grade; in the History course, 25%; in the Sociology course, 25%; and, in the Travel Industry Management course, 31%. However, in the Travel Industry Management course, three mid-term examinations were given in which the lowest grade was dropped, and in the Sociology course, the written assignment could be resubmitted after corrections were made. In the Chemistry course the

instructor stipulated that, if a student's examination grades improved at the end of the course, then borderline grade students would be carried over to the next grade level. The stakes in each of these mid-term examinations varied, but they may have been offset by a high stakes examination such as in the History course, with one mid-term examination, and the grading method in the Travel Industry Management course, with the chance to drop the lowest grade.

Because this study was done in the field, its strength should be external validity. However, some caution is required in generalizing the results of this study beyond college students in large introductory courses. Motivation dimensions are affected by the classroom environment, especially by such structures as evaluation and feedback. Other structures, such as type of task and activities, would also affect student motivation. Smaller courses that have discussion in class as a part of the grading process may find a different global-situation-specific model of motivation dimensions. In this study, the History course did have discussion labs that met weekly in addition to the large lecture classes. However, the effect of these discussion labs could not be measured because of other intervening variables in the study.

Senior and junior college students may also be more settled in their academic and career plans, which might affect the stability of the task value dimension if they

were to be measured using the MSLQ. This study has focused on large introductory courses because these seem to be of concern at universities as larger classes are becoming more frequent for first- and second-year students.

RECOMMENDATIONS FOR FUTURE RESEARCH

Researchers have been calling for studies that examine motivation over a period of time in a natural classroom setting (Blumenfeld, 1993; Hagen, et al. 1992; Pintrich & Garcia, 1992; Weiner, 1990). This study has examined five motivation dimensions, which can be represented as an expectancy-value motivation model, at three points in time in a college course: at the end of the first three weeks; before the first mid-term examination at five to nine weeks after the semester began; then again after grade information was given out at six to 10 weeks after the semester had begun. An immediate follow up to this study is to collect information at later periods in the semester, possibly through another pre- and post-grade information measurement to see if the student motivation dimensions shift in a cyclical pattern or if dimensions become more stable as students become more aware of their ability and the course material. In addition, interviews with students could be conducted to determine if other factors might be involved regarding their perceptions of their ability over time.

Perhaps student interviews might detect factors outside of the classroom that are affecting student perception of ability, such as performance in other courses or adjustment to college life.

Another path for future research is to look at different types of classroom structures that might affect motivation in different ways. Pintrich (1989) argued that the task is the main classroom structure in college teaching, which embodies not only evaluation but learning activities and materials as well. This study might be duplicated by using another classroom structure such as smaller classes that use discussion as part of the grading process, or by using a large, lecture course (such as the History course used in this study), in which students in a discussion lab are compared with students in a different lab format. In this case, perhaps because participating in discussion is more of a performance over time in which feedback is given regularly, e.g. verbal or non-verbal affirmations ("Good point" or head nods), it might be found that such dimensions as self-efficacy and intrinsic goal orientation would remain more stable because grade information is provided on an ongoing basis and students are able to judge and make adjustments on their performance rather than on a one-shot, standardized examination.

As a addition to quantitative measures, interviews with both the instructor and students might prove useful in

determining both intent of the task or feedback and the students' perception of this same task or feedback, especially if the students are culturally different from the instructor. For example, an instructor who feels, in a discussion setting, that challenging a student's comment is positive feedback may be seen as providing negative feedback by the student whose culture is averse to public confrontation.

Researchers have made clear the link between motivation and cognition, that some motivation dimensions drive cognitive strategies (Pintrich & Garcia, 1992); that both "skill" and "will" are needed in student learning (Paris & Winograd, 1990a, 1990b); and that firm theoretical links exist between motivation theory and cognitive theory (Pintrich, 1989). However, there is a concern about when would be the best time for students to learn cognitive strategies and use them well (Blumenfeld, 1992; Pintrich & Schrauben, 1992). This study has identified three motivation dimensions that seem to be situation-specific in nature and which are the same three dimensions that Pintrich and Garcia (1992) found to be highly related to deeper processing learning strategies and metacognition, as well as to final grade (Pintrich et al., 1991). Studies might be done to further test these three dimensions and their relationship to cognition and the classroom environment. If these factors are so responsive to the environment, how might the

environment be modified to stabilize these dimensions? How would strategy training be introduced, knowing that the key motivation dimensions that drive strategy use are undergoing shifts throughout the semester?

Researchers have argued that motivation studies would benefit from a comprehensive theory (Ford, 1992) and that goal theory, the approach or goal that a student adopts in a learning situation (e.g. intrinsic or extrinsic) might be one that pulls together key motivation components (Weiner, 1990). While this study was premised on the revised expectancy-value model of achievement motivation (Pintrich et al., 1991; Pintrich, 1989; McKeachie et al., 1986), one interpretation of the results could be that the situation-specific dimensions are related to an extrinsic goal orientation. Intrinsic goal orientation, self-efficacy, and task value all fluctuate for the *above expected* and *below expected* grade discrepancy groups, who have extrinsic goal orientations that are high, and stable, above that of *same as expected* group. Having a low extrinsic goal orientation may be an underlying construct in maintaining stable and high levels of intrinsic goal orientation, self-efficacy, and task value, which are motivation dimensions that are linked with deeper processing strategy usage. In this case, the relationship between intrinsic and extrinsic goal orientation may be less orthogonal than Pintrich (1989) has

found and is more a continuum, in which intrinsic and extrinsic goal orientations represent the two extremes.

Another interpretation of these results in the context of model development is that students having a naive awareness of the academic environment might show the most fluctuation on situation-specific motivation dimensions. Perhaps students who cannot predict their examination or project performance perhaps are not picking up cues from the instructor or materials. These students have intrinsic goal orientation, task value, and self-efficacy motivation levels that fluctuate with grade information. In this case, this study's model may be limited to college freshman and sophomores who are generally most naive about the academic environment. Interviewing students, in addition to collecting quantitative data, might be beneficial in that the construct of naive awareness could be more fully explored. Students could be asked about the origination of their misconceptions of college work and whether these misconceptions extend to all courses and other academic areas.

Future studies also might explore in more depth the relationships extrinsic goal orientation and naive awareness of the academic environment have with situation-specific motivation dimensions. It could be determined whether these relationships are more pronounced at the college level and

whether they only are influenced by grade information and not other classroom structures.

IMPLICATIONS FOR EDUCATION

In large introductory courses, students easily get lost due to the size of class and the often one-way interaction from instructor to student. Students who take these large introductory courses are usually the most academically inexperienced; freshman students who most lack the self-regulation needed to handle the majority of the learning that goes on outside of the classroom (Pintrich, 1989). One of the primary reasons for conducting this study was the need to deconstruct one part of the learning experience of these students in class, which is achievement motivation, and understand why they do not show up in class, seem so shocked with their grade, and seem to not have any interest in the material. This study has found that there are differences in motivational levels in students and that they are not necessarily grade based. Students in the *above expected* group had the lowest level and steepest decline in task value as well as intrinsic goal orientation. The *below expected* group had declines in all three situation-specific motivation dimensions. Grade expectation seemed to be the more practical and dynamic explanation to student motivation.

Students who were unable to predict their performance had the steepest decline and the lowest scores in the dimensions that have been found to be predictors of deeper processing strategy use and final grade performance: intrinsic goal orientation, self-efficacy, and task value (Pintrich & Garcia, 1992; Pintrich et al., 1991). One of the causes of the drop in intrinsic goal orientation and self-efficacy for the *below expected* group was the need to focus on learning and performance. They did not know either their ability and effort levels or the demands of the task. If students are naive in their awareness of the academic environment, then perhaps they also are unknowingly "tricking" themselves into thinking that they are able to master the material or will find all the course material interesting and useful. One instructional intervention might be to provide students early in the semester with as many sample problems and feedback that reflect the examination or the thinking that is being assessed at mid-term so students will be able to assess their competency and correct early their naive awareness of the course and course material.

This study of motivation dimensions at the college level has shown that students are reacting in a fairly complex manner to grade information, at least up to their first mid-term examination grade reports in spite of the uni-dimensional, normative classroom structure typical of the university. However, one can envision an ideal

classroom setting that would maximize the positive motivation dimensions. Having students maintain intrinsic goal orientation and task value for required courses is difficult. Choice to some extent has been limited. Instructors might work to have material tied in with student interest and goals, such as when using analogies and metaphors. The examination as well could be designed to be a meaningful learning experience as well as an assessment activity, in which students find the questions if not provocative at least tied in with a personal interest or goal. Perhaps the challenge for instructors is to devise an assignment or examination question that would intrigue even the most "hardened," extrinsic goal oriented student. However, the drawback may be that personal interest and goals vary widely, which would require multiple questions or ones that students could modify. More instructional assistance would be required because developing the questions that relate to individual interests and grading the student answers to these questions would require more time.

The possible underlying construct that explains the decline of *above expected* and *below expected* students in motivation dimensions is high extrinsic goal orientation. Students in this group might be concentrating more on their performance and what others think rather than on their own abilities and the task demands. The students in the *same as*

expected group had low extrinsic goal orientation, and their intrinsic goal orientation, self-efficacy and task value were stable and remained at a high level even after a low grade. Instructors might look at avoiding teaching methods that promote extrinsic goal orientation in the college classroom, such as normative grading, no choice in tasks, information poor feedback, and infrequent opportunity to improve or show mastery. While this might be going against college culture which is competitive and normative, more instructors are experimenting with collaborative and mastery based projects. Instructors could work to develop a more multi-dimensional classroom, in which students would be working on different tasks or projects at different times. Grading can be done with more comments and exams given more frequently to allow students the ability to assess his or her knowledge. However, some of the above suggestions might not be feasible in large classes without instructional assistance.

Instructors and learning specialists perhaps should realize that it may be difficult to change student control of learning beliefs and extrinsic goal orientation if they are in fact global and hence stable motivation dimensions. While it is beyond the purview of this study to determine the specific classroom environment structures that might lower extrinsic goal orientation in students, the classroom environment studies on motivation have shown that most

motivation dimensions can be changed, at least in the primary and secondary school levels. However, as the years go by and a student builds up a history of experiences, whether it is learned helplessness (Stipek, 1993) or high extrinsic goal orientation, the dimension becomes more fixed or global and the intervention to change student motivation has to be precise and consistent. Having one classroom structure that lowers a motivation dimension and another that increases it would not be effective in changing that motivation dimension. For example, if the instructor wants to lower extrinsic goal orientation and designs a multi-dimensional assignment or examination, which will lower social comparison and cause students to focus more on self-improvement, but still grades on a curve, which enhances social comparison and external performance, the effects of the classroom structures would probably cancel each other out and the student would not have any change in his or her extrinsic goal orientation. If lowering extrinsic goal orientation is indeed the key to maintaining high and stable levels of the situation-specfic dimensions as found in this study, then perhaps it would be worth the effort and resources to review all components of instruction--from classroom teacher feedback to school assessment methods--in order to determine their effect on student extrinsic goal orientation and then begin changing or eliminating those

components that promote or do nothing to reduce extrinsic goal orientation.

While the control of learning beliefs dimension is high and stable for most students, it may be a problem for the academic newcomer, the younger and first generation students who are in their first semester at the university. Programs might be developed to target these students as their effort attribution may be either higher than others to start off with or declines at a higher rate than the other students. However, care should be taken that freshman are not grouped too closely together (e.g., freshman seminar courses and learning communities) because they may only reinforce their naive awareness and misconceptions of their abilities and academic work. A better program model might be one in which new students are from the outset paired with seniors or have early interaction with faculty. Summer orientation programs for new students that involve faculty and "mini-courses" might serve as a way to provide these students an opportunity to adjust their conceptions of what they can do and the level of thinking and effort that is expected at the university level.

Appendix A

Motivated Strategies for Learning Questionnaire

A Study of College Teaching and Learning

FALL 1993

Your instructor is participating in a study of college teaching and learning. During this semester you will be asked to fill out three questionnaires related to your motivation and learning in this class.

YOUR PARTICIPATION IS VOLUNTARY AND NOT RELATED IN ANY WAY TO YOUR GRADE IN THIS CLASS. If you decide to participate now, but later do not want your answers included in the study, you can ask to have them omitted.

THIS IS NOT A TEST. THERE ARE NO RIGHT OR WRONG ANSWERS. Please respond to this questionnaire about your motivation for work in this class as accurately as possible.

All responses will be coded and kept strictly confidential. Only I, the investigator of this study, will see your individual responses. Again, your answering this questionnaire is in no way related to your class grade. Please call me if you have any questions about this study or want to see a summary of your individual responses.

Thank you for your cooperation.

Michael Kirk-Kuwaye, PhD Candidate
Educational Psychology (956-4887)

How to fill out this questionnaire:

1. Do **NOT** mark this questionnaire; mark all answers on the computer scan sheet provided.

2. Use a #2 pencil to mark your answers on the scan sheet.

3. Fill the circle completely when marking your answers; make sure that the number in the circle corresponds to your answer number.

4. Do not spend too much time answering any one question; this questionnaire should take only 5 - 10 minutes to complete.

5. In the appropriate circles on the left section of the scan sheet, indicate your sex, birth date, social security number/student identification number. Make sure that you write the numbers in the blocks and fill in the corresponding circles below the numbers.

Motivated Strategies for Learning Questionnaire

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

1	2	3	4	5	6	7
not at all true of me						very true of me

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

Motivated Strategies for Learning Questionnaire

		not at all true of me						very true of me
9.	It is my own fault if I don't learn the material in this course.	1	2	3	4	5	6	7
10.	It is important for me to learn the course material in this class.	1	2	3	4	5	6	7
11.	The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.	1	2	3	4	5	6	7
12.	I'm confident I can learn the basic concepts taught in this course.	1	2	3	4	5	6	7
13.	If I can, I want to get better grades in this class than most of the other students.	1	2	3	4	5	6	7
14.	When I take tests I think of the consequences of failing.	1	2	3	4	5	6	7
15.	I'm confident I can understand the most complex material presented by the instructor in this course.	1	2	3	4	5	6	7
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	6	7
17.	I am very interested in the content area of this course.	1	2	3	4	5	6	7
18.	If I try hard enough, then I will understand the course material.	1	2	3	4	5	6	7
19.	I have an uneasy, upset feeling when I take an exam.	1	2	3	4	5	6	7

Motivated Strategies for Learning Questionnaire

		not at all true of me						very true of me
20.	I'm confident I can do an excellent job on the assignments and tests in this course.	1	2	3	4	5	6	7
21.	I expect to do well in this class.	1	2	3	4	5	6	7
22.	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.	1	2	3	4	5	6	7
23.	I think the course material in this class is useful for me to learn.	1	2	3	4	5	6	7
24.	When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.	1	2	3	4	5	6	7
25.	If I don't understand the course material, it is because I didn't try hard enough.	1	2	3	4	5	6	7
26.	I like the subject matter of this course.	1	2	3	4	5	6	7
27.	Understanding the subject matter of this course is very important to me.	1	2	3	4	5	6	7
28.	I feel my heart beating fast when I take an exam.	1	2	3	4	5	6	7
29.	I'm certain I can master the skills being taught in this class.	1	2	3	4	5	6	7
30.	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	6	7
31.	Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.	1	2	3	4	5	6	7

Appendix B

Demographic Questions

32. Which one of the following ethnic groups do you primarily identify as belonging to?

1 = African-American or Black
2 = Caucasian
3 = Chinese
4 = Filipino
5 = Hawaiian/Part Hawaiian
6 = Japanese
7 = Korean
8 = Pacific Islander
9 = Other Asian
0 = other

33. I am currently enrolled in the:

1 = Colleges of Arts & Sciences
2 = College of Business Administration
3 = College of Education
4 = College of Engineering
5 = College of Tropical Agr. & Human Resources
6 = School of Architecture
7 = School of Hawaiian, Asian & Pac. Studies
8 = School of Nursing/ Social Work/Med. Tech.
9 = School of Travel Industry Management
0 = College of Continuing Education & Comm. Svc.

34. Including this semester, how many semesters have you been at UHM ? (Count fall and spring semesters only.)

1 = 1
2 = 2
3 = 3
4 = 4
5 = 5
6 = 6
7 = 7
8 = 8
9 = 9
0 = 10 or more

35. What grade do you expect to receive on the next mid-term or major project in this class?

1 = A
2 = B
3 = C
4 = D
5 = F

36. My permanent residence is

1 = on Oahu
2 = on a Neighbor Island in Hawaii
3 = in a U.S. territory (Guam, Puerto Rico)
4 = in another state
5 = in another country

37. The semester before my first coming to UHM, I was in

1 = high school
2 = a **UH** community college
3 = a **non-UH** community college
4 = another 4-year college/university
5 = a job, working full time
6 = other

38. My class standing is

1 = freshman
2 = sophomore
3 = junior
4 = senior
5 = unclassified

39. Given what you know now, where do you expect to be in terms of your academic performance in this class at the end of the semester?

1 = highest 20%
2 = second 20%
3 = third 20%
4 = fourth 20%
5 = lowest 20%

40. How decided are you about your major:

1 = Completely undecided
2 = Have several ideas
3 = Have one idea, but not committed
4 = Completely decided

41. Are you the first in your immediate family to attend a 4-year college? 1 = yes 2 = no

42. Is English your first language? 1 = yes 2 = no

NOTE: Please check to see if you have indicated your sex, birth date, and social security number/student identification number on the left section of the scan sheet.

Thank you!

Appendix C

Discrepancy Question (Item 32)

32. For this course, how does the grade you received on the past mid-term exam (or project) compare to what you had expected?

1 = quite a bit below
2 = below
3 = about the same
4 = above
5 = quite a bit above

33. How difficult is this course compared to others you have taken or are taking?

1 = a lot more difficult
2 = somewhat more difficult
3 = about the same
4 = somewhat easier
5 = a lot easier

Please remember to

*** indicate your social security no./student ID no. on the scan sheet;**

*** fill out the attached release of grade information form, if you are willing to participate.**

THANK YOU!

Appendix D

"Dummy" Questionnaire

K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K

A Study of College Teaching and Learning

FALL 1993

Your instructor is participating in a study of college teaching and learning. During this semester you will be asked to fill out three questionnaires related to your motivation and learning in this class.

YOUR PARTICIPATION IS VOLUNTARY AND NOT RELATED IN ANY WAY TO YOUR GRADE IN THIS CLASS. If you decide to participate now, but later do not want your answers included in the study, you can ask to have them omitted.

THIS IS NOT A TEST. THERE ARE NO RIGHT OR WRONG ANSWERS. Please respond to this questionnaire about your motivation for work in this class as accurately as possible.

All responses will be coded and kept strictly confidential. Only I, the investigator of this study, will see your individual responses. Again, your answering this questionnaire is in no way related to your class grade. Please call me if you have any questions about this study or want to see a summary of your individual responses.

Thank you for your cooperation.

Michael Kirk-Kuwaye, PhD Candidate
Educational Psychology (956-4887)

How to fill out this questionnaire:

1. Do **NOT** mark this questionnaire; mark all answers on the computer scan sheet provided.

2. Use a #2 pencil to mark your answers on the scan sheet.

3. Fill the circle completely when marking your answers; make sure that the number in the circle corresponds to your answer number.

4. Do not spend too much time answering any one question; this questionnaire should take only 5 - 10 minutes to complete.

5. In the appropriate circles on the left section of the scan sheet, indicate your social security number/student identification number. Make sure that you write the numbers in the blocks and fill in the corresponding circles below the numbers.

K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K K

Motivated Strategies for Learning Questionnaire

Learning Strategies

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

1	2	3	4	5	6	7
not at all true of me						very true of me

1.	When I study the readings for this course, I outline the material to help me organize my thoughts.	1	2	3	4	5	6	7
2.	During class time I often miss important points because I'm thinking of other things.	1	2	3	4	5	6	7
3.	When studying for this course, I often try to explain the material to a classmate or friend.	1	2	3	4	5	6	7
4.	I usually study in a place where I can concentrate on my course work.	1	2	3	4	5	6	7
5.	When reading for this course, I make up questions to help focus my reading.	1	2	3	4	5	6	7
6.	I often feel so lazy or bored when I study for this class that I quit before I finish what I planned to do.	1	2	3	4	5	6	7
7.	I often find myself questioning things I hear or read in this course to decide if I find them convincing.	1	2	3	4	5	6	7
8.	When I study for this class, I practice saying the material to myself over and over.	1	2	3	4	5	6	7

Motivated Strategies for Learning Questionnaire

	not at all true of me						very true of me
9. Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.	1	2	3	4	5	6	7
10. When I become confused about something I'm reading for this class, I go back and try to figure it out.	1	2	3	4	5	6	7
11. When I study for this course, I go through the readings and my class notes and try to find the most important ideas.	1	2	3	4	5	6	7
12. I make good use of my study time for this course.	1	2	3	4	5	6	7
13. If course readings are difficult to understand, I change the way I read the material.	1	2	3	4	5	6	7
14. I try to work with other students from this class to complete the course assignments.	1	2	3	4	5	6	7
15. When studying for this course, I read my class notes and the course readings over and over again.	1	2	3	4	5	6	7
16. When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.	1	2	3	4	5	6	7
17. I work hard to do well in this class even if I don't like what we are doing.	1	2	3	4	5	6	7
18. I make simple charts, diagrams, or tables to help me organize course material.	1	2	3	4	5	6	7

Motivated Strategies for Learning Questionnaire

	not at all true of me						very true of me
19. When studying for this course, I often set aside time to discuss course material with a group of students from the class.	1	2	3	4	5	6	7
20. I treat the course material as a starting point and try to develop my own ideas about it.	1	2	3	4	5	6	7
21. I find it hard to stick to a study schedule.	1	2	3	4	5	6	7
22. When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions.	1	2	3	4	5	6	7
23. Before I study new course material thoroughly, I often skim it to see how it is organized.	1	2	3	4	5	6	7
24. I ask myself questions to make sure I understand the material I have been studying in this class.	1	2	3	4	5	6	7
25. I try to change the way I study in order to fit the course requirements and the instructor's teaching style.	1	2	3	4	5	6	7
26. I often find that I have been reading for this class but don't know what it was all about.	1	2	3	4	5	6	7
27. I ask the instructor to clarify concepts I don't understand well.	1	2	3	4	5	6	7
28. I memorize key words to remind me of important concepts in this class.	1	2	3	4	5	6	7
29. When course work is difficult, I either give up or only study the easy parts.	1	2	3	4	5	6	7

Motivated Strategies for Learning Questionnaire

	not at all true of me						very true of me
30. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.	1	2	3	4	5	6	7
31. I try to relate ideas in this subject to those in other courses whenever possible.	1	2	3	4	5	6	7
32. When I study for this course, I go over my class notes and make an outline of important concepts.	1	2	3	4	5	6	7
33. When reading for this class, I try to relate the material to what I already know.	1	2	3	4	5	6	7
34. I have a regular place set aside for studying.	1	2	3	4	5	6	7
35. I try to play around with ideas of my own related to what I am learning in this course.	1	2	3	4	5	6	7
36. When I study for this course, I write brief summaries of the main ideas from the readings and my class notes.	1	2	3	4	5	6	7
37. When I can't understand the material in this course, I ask another student in this class for help.	1	2	3	4	5	6	7
38. I try to understand the material in this class by making connections between the readings and the concepts from the lectures.	1	2	3	4	5	6	7
39. I make sure that I keep up with the weekly readings and assignments for this course.	1	2	3	4	5	6	7
40. Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.	1	2	3	4	5	6	7

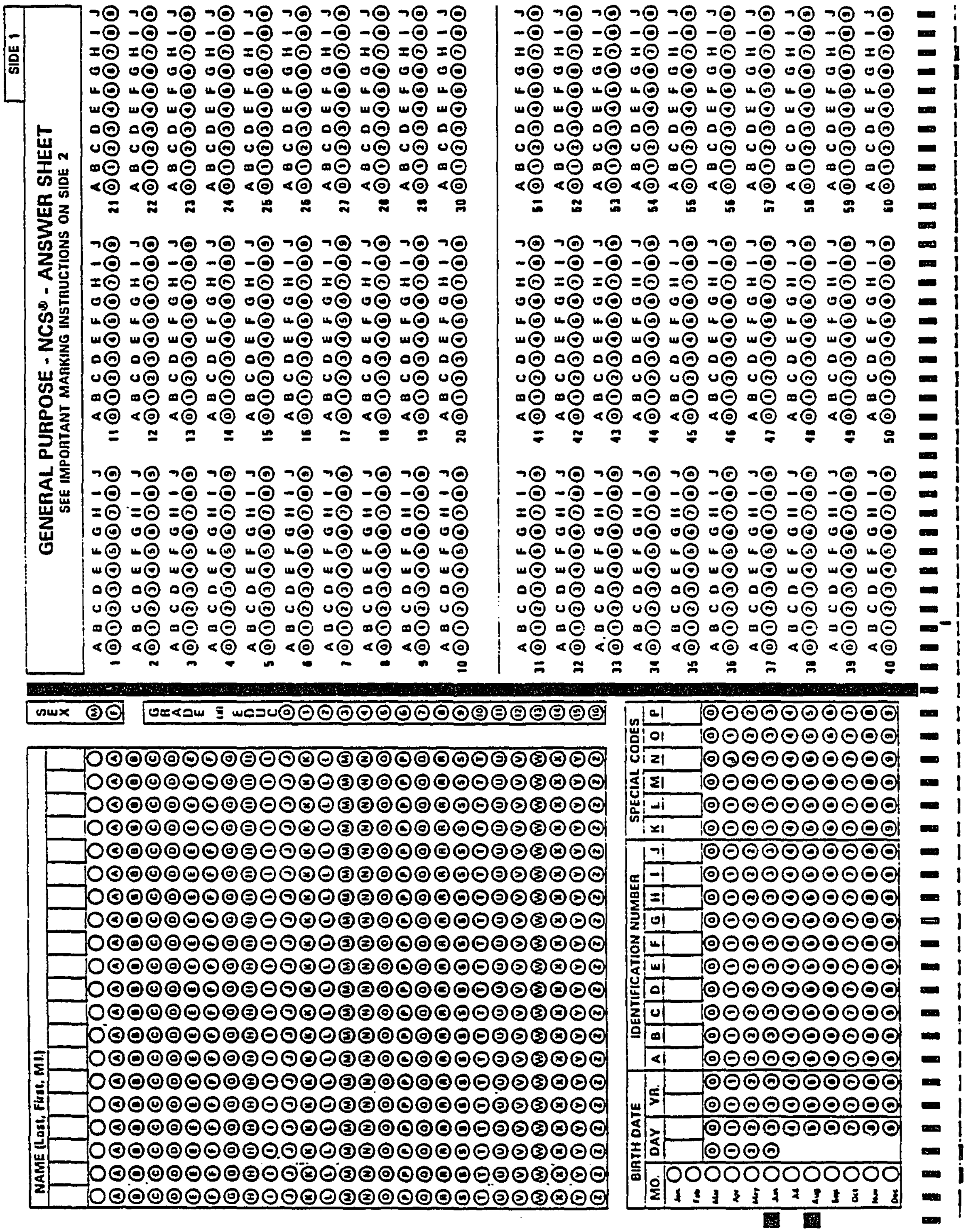
	not at all true of me						very true of me
41. I make lists of important items for this course and memorize the lists.	1	2	3	4	5	6	7
42. I attend this class regularly.	1	2	3	4	5	6	7
43. Even when course materials are dull and uninteresting, I manage to keep working until I finish.	1	2	3	4	5	6	7
44. I try to identify students in this class whom I can ask for help if necessary.	1	2	3	4	5	6	7
45. When studying for this course I try to determine which concepts I don't understand well.	1	2	3	4	5	6	7
46. I often find that I don't spend very much time on this course because of other activities.	1	2	3	4	5	6	7
47. 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	6	7
48. If I get confused taking notes in class, I make sure I sort it out afterwards.	1	2	3	4	5	6	7
49. I rarely find time to review my notes or readings before an exam.	1	2	3	4	5	6	7
50. I try to apply ideas from course readings in other class activities such as lecture and discussion.	1	2	3	4	5	6	7

NOTE: Please check to see if you have indicated your social security no./ student indentification number on the left section of the scan sheet.

Thank you!

Appendix E

Answer Sheet



REFERENCES

Ames, C. (1992a). Achievement goals and the classroom motivational climate. In D. L. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 327-348). Hillsdale, NJ: Lawrence Erlbaum Associates.

Ames, C. (1992b). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261-271.

Ames, C., & Ames, R. (1984). Goal structures and motivation. *The Elementary School Journal, 85*, 39-52.

Anderson, L., Stevens, D., Prawat, R., & Nickerson, J. (1988). Classroom task environments and students' task-related beliefs. *The Elementary School Journal, 88*, 281-295.

Assor, A., & Connel, J. P. (1992). The validity of students' self-reports as measures of performance affecting self-appraisals. In D. L. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 25-47). Hillsdale, NJ: Lawrence Erlbaum Associates.

Astin, A. W. (1993). *What matters in college? Four Critical Years revisited*. San Francisco: Jossey-Bass.

Atkinson, J. W. (1964). *An introduction to motivation*. Princeton, NJ: Van Nostrand.

Atman, K. (1993, January). *Goal accomplishment style and psychological type: Cultural variations*. Paper presented at the Psychological Type and Culture--East and West: A Multicultural Research Symposium, University of Hawaii.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147.

Bem, A. P., & Potkay, C. R. (1979, May). *Inconsistency across time and situations: A decade of research using the adjective generation technique (AGT)*. Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago.

Blumenfeld, P. C. (1992). Classroom learning and motivation: Clarifying and expanding goal theory. *Journal of Educational Psychology, 84*, 272-281.

Brophy, J. (1983). Conceptualizing student motivation. *Educational Psychologist, 18*, 200-215.

Brophy, J. (1987). Synthesis of research on strategies for motivating students to learn. *Educational Leadership, 44*, 40-48.

Campbell, D. T., & Stanley, J. C. (1971). *Experimental and Quasi-Experimental Designs for Research*. Chicago: Rand McNally.

Clifford, M. M. (1991). Risk taking: Theoretical, empirical and educational considerations. *Educational Psychologist, 26*, 263-297.

Connell, J. (1985). A new multidimensional measure of children's perceptions of control. *Child Development, 56*, 1019-1041.

Corno, L., & Rohrkemper, M. M. (1985). The intrinsic motivation to learn in classrooms. In C. Ames & R. Ames (Eds.), *Research on motivation in education: Vol. 2. The classroom milieu* (pp. 53-90). New York: Academic Press.

Corno, L., & Snow, R. (1986). Adapting teaching to individual differences among learners. In M. Wittrock (Ed.), *Handbook of research on teaching* (pp. 605-629). New York: Macmillian.

Covington, M. (1984). The self-worth theory of achievement motivation: Findings and implications. *The Elementary School Journal, 85*, 5-20.

Csikszentmihalyi, M., & Nakamura, J. (1989). The dynamics of intrinsic motivation: A study of adolescents. In C. Ames and R. Ames (Eds.), *Research on motivation in education: Vol. 3. Goals and cognitions*. New York: Academic Press.

de Charms, R. (1968). *Personal causation*. New York: Academic Press.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (1992). The initiation and regulation of intrinsically motivated learning and achievement. In A. K. Boggiano & T. S. Pittman (Eds.), *Achievement and motivation: A social-developmental perspective* (pp. 9-36). Cambridge: Cambridge University Press.

Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology, 73,* 642-650.

Dweck, C. S., & Elliott, E. S. (1983). Achievement motivation. In E. M. Heatherington (Ed.), *Handbook of child psychology: Vol. 4. Socialization, personality, and social development* (pp. 643-691). New York: Wiley.

Eccles, J. (1983). Expectancies, values and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motives* (pp. 75-146). San Francisco: Freeman.

Erikson, E. H. (1950). *Childhood and society*. New York: Norton.

Ferguson, G. A., & Takane, Y. (1989). *Statistical analysis in psychology and education* (6th ed.). New York: McGraw-Hill.

Ford, M. E. (1992). *Motivating humans: Goals, emotions, and personal agency beliefs*. Newbury Park, CA: Sage.

Freud, S. (1957/1914). Instincts and their vicissitudes. In J. Rickman (Ed.), *A general selection from the works of Sigmund Freud* (pp. 70-86). Garden City, NY: Doubleday. (Original work published in 1914).

Hagen, A. S., Reed, J. H., Wicker, F. W., Schallert, D. L., & Wiehe, J. A. (1992, April). *Motivational and cognitive factors affecting involvement in goal pursuit: A reconfirmation and extension of research.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Hamilton, H. & Gordon, D. (1978). Teacher-child interactions in preschool and task persistence. *American Educational Research Journal, 15,* 459-466.

Harackiewicz, J. M., & Sansone, C. (1991). Goals and intrinsic motivation: You *can* get there from here. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 7, pp. 21-49). Greenwich, CT: JAI Press.

Hart, D., & Keller, M. J. (1980). Self-reported reasons for poor academic performance of first-term freshman. *Journal of College Student Personnel, 21* (6), 529-34.

Harter, S. (1981a). A model of mastery motivation in children: Individual differences and developmental change. In A. Collins (Ed.), *Minnesota symposia on child psychology* (Vol. 14, pp. 215-255). Hillsdale, NJ: Erlbaum.

Harter, S. (1981b). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental Psychology, 17,* 300-312.

Harter, S., & Connell, J. (1984). A model of the relationship among children's academic achievement and their self-perceptions of competence, control, and motivational orientation. In J. Nicholls (Ed.), *The development of achievement motivation* (pp. 219-250). Greenwich, CT: JAI.

Hull, C. L. (1952). *A behavior system.* New Haven, CT: Yale Univ. Press.

Jagacinski, C. M. (1992). The effects of task involvement and ego involvement on achievement-related cognition and behaviors. In D. L. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 307-326). Hillsdale, NJ: Lawrence Erlbaum Associates.

Kerlinger, F. N. (1986). *Foundations of behavioral research* (3rd ed.). New York: CBS College Publishing.

Lepper, M. R., & Hodell, M. (1989). Intrinsic motivation in the classroom. In C. Ames & R. Ames (Eds.), *Research on motivation in education: Vol. 3. Goals and cognitions* (pp. 73-105). New York: Academic Press.

Lewin, K. (1954). Behavior and development as a function of the total situation. In L. Carmichael (Ed.), *Manual of child psychology* (pp. 918-970). New York: Wiley.

Livengood, J. M. (1992). Students' motivational goals and beliefs about effort and ability as they relate to college academic success. *Research in Higher Education, 33,* 247-61.

Marshall, H. H., & Weinstein, R. S. (1984). Classroom factors affecting students' self-evaluations: An interactional model. *Review of Educational Research, 54,* 301-325.

Maslow, A. H. (1968). *Toward a psychology of being* (2nd ed.). Princeton: Van Nostrand Reinhold.

McKeachie, W. J., Pintrich, P. R., Lin, Y., & Smith, D. (1986). *Teaching and learning in the college classroom: A review of the research literature*. Ann Arbor: National Center for Research to Improve Postsecondary Teaching and Learning (NCRIPTAL), University of Michigan.

Nicholls, J. G. (1984). Achievement motivation: conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91* (3), 328-346.

Nicholls, J. G. (1988). Conceptions of ability and achievement motivation: A theory and its implications for education. In S. G. Paris, G. M. Olson, & H. W. Stevenson (Eds.), *Learning and motivation in the classroom* (pp. 211-237). Hillsdale, NJ: Lawrence Erlbaum Associates.

Nicholls, J. G. (1992). Students as educational theorists. In D. L. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 267-286). Hillsdale, NJ: Lawrence Erlbaum Associates.

Pace, W. T. (1970, March). *On congruence and dissonance in the perceptions of Negro teacher trainees*. Paper presented at the annual meeting of the American Educational Research Association, Minneapolis.

Paris, S. G., & Winograd, P. (1990a). How metacognition can promote academic learning and instruction. In B. F. Jones & L. Idol (Eds.), *Dimensions of thinking and cognitive instruction* (pp. 15-51). Hillsdale, NJ: Lawrence Erlbaum Associates.

Paris, S. G., & Winograd, P. (1990b). Promoting metacognition and motivation of exceptional children. *Journal of Remedial and Special Education, 11*, 7-15.

Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. New York: Holt, Rinehart & Winston.

Peterson, P., & Swing, S. (1982). Beyond time on task: Students' reports of their thought processes during direct instruction. *Elementary School Journal, 82*, 481-491.

Pintrich, P. R. (1988a). A process-oriented view of student motivation and cognition. In J. S. Searle & L. A. Mers (Eds.), *Improving teaching and learning through research: New directions for instructional research*. San Francisco: Jossey-Bass.

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

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

Pintrich, P. R., & Garcia, T. (1992, April). *An integrated model of motivation and self-regulated learning*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Pintrich, P. R., & Schrauben, B. (1992). Students' motivational beliefs and their cognitive engagement in classroom academic tasks. In D. L. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 149-183). Hillsdale, NJ: Lawrence Erlbaum Associates.

Pintrich, P. R., Marx, R. W., & Boyle, R. A. (1993). Beyond cold conceptual change: The role of motivational beliefs and classroom contextual factors in the process of conceptual change. *Review of Educational Research, 63*, 167-199.

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

Riegel, K. F. (1975). Adult life crises: A dialectical interpretation of development. In N. Data & L. H. Ginsberg (Eds.), *Life-span developmental psychology: Normative life crises*. New York: Academic Press.

Rogers, C. R. (1961). *On becoming a person*. New York: Houghton Mifflin.

Rohrkemper, M., & Corno, L. (1988). Success and failure on classroom tasks: Adaptive learning and classroom teaching. *Elementary School Journal, 88*, 297-312.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control reinforcement. *Psychological Monograhs, 80*, 1-28.

Ryan, R. & Connell, J. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749-761.

Ryan, R., Connell, J., & Deci, E. L. (1985). A motivational analysis of self-determination and self-regulation in education. In C. Ames & R. Ames (Eds.), *Research on motivation in education: Vol. 2. The classroom milieu* (pp. 13-51). New York: Academic Press.

Schunk, D. H. (1989). Self-efficacy and cognitive skill learning. In C. Ames & R. Ames (Eds.), *Research on motivation in education: Vol. 3. Goals and cognitions* (pp. 13-44). New York: Academic Press.

Schunk, D. H. (1985). Self-efficacy and school learning. *Psychology in the Schools, 22*, 208-223.

Schunk, D. H. (1992). Theory and research on student perceptions in the classroom. In D. H. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 3-23). Hillsdale, NJ: Lawrence Erlbaum Associates.

Spence, J. T., & Helmreich, R. L. (1983). Achievement-related motives and behaviors. In J. T. Spence (Ed.), *Achievement and achievement motives: Psychological and sociological approaches* (pp. 7-23). San Francisco: W. H. Freeman.

Spence, K. W. (1958). A theory of emotionally based drive (D) and its relation to performance in simple learning situations. *American Psychologist, 13*, 131-141.

Stark, J. S., Lowther, J. A., Ryan, M., Bomotti, S. S., Genthon, M., Martens, G., & Haven, C. L. (1988). *Reflections on course planning: Faculty and students consider influences and goals*. Ann Arbor: Board of Regents of The University of Michigan/NCRIPTAL

Stipek, D. J. (1993). *Motivation to learn: From theory to practice* (2nd ed.). Boston: Allyn & Bacon.

Stipek, D. J., & Mac Iver, D. (1989). Developmental change in children's assessment of intellectual competence. *Child Development, 60*, 521-538.

Tannen, D. (1985). Relative focus on involvement in oral and written discourse. In D. Olson, N. Torance, & A. Hildyard (Eds.), *Literacy, language, and learning* (pp. 124-147). London: Cambridge University Press.

Tierney, W. G. (1992). An anthropological analysis of student participation in college. *Journal of Higher Education, 63*, 603-618.

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: Univ. of Chicago Press.

Tolman, E. C. (1932). *Purposive behavior in animals and man*. New York: Appleton-Century-Crofts.

Wambach, C. A. (1993). Motivational themes and academic success of at-risk freshmen. *Journal of Developmental Education, 16*(2), 8-10.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*, 548-573.

Weiner, B. (1990). History of motivational research in education. Journal of *Educational Psychology, 82*, 616-622.

Weinstein, R. H. (1983). Student perceptions of schooling. *Elementary School Journal, 83*, 287-312.

Wlodkowski, R. (1986). *Motivation and teaching: A practical guide*. Washington, DC: National Education Association.