

Positive and Negative Incentives in the Classroom: An Analysis of Grading Systems and Student Motivation

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Abstract: This study examined how particular grading systems motivate students. Since competency-based grading and point systems are most prevalent (Hendrickson and Gable, 1999), the current study is modeled around these systems. The grading systems used for this study were divided into two categories and defined as those students who earned their grades (“earners”) and those who maintained their grades (“maintainers”). The earners started the semester with 0 points and added points with each graded assignment, whereas the maintainers were given the maximum number of points available for the course at the beginning of the semester and then subtracted points from this overall total as they lost points on a graded assignment. The earners received positive incentives (i.e., the addition of points), whereas the maintainers received negative incentives (i.e., the subtraction of points). It was hypothesized that students who received negative incentives would exhibit higher levels of motivation than those who received positive incentives. Quantitative and qualitative methodologies were used to test the hypothesis. Although the quantitative results of this study marginally support the hypothesis, the qualitative results illuminate how the different incentives motivated students differently. The maintainers were driven by satisfaction (i.e., saw grading practices as fair; liked starting with an A), unfamiliarity (i.e., had to learn a new grading system), stress, and punishment (i.e., the threat of losing points). On the other hand, the earners were motivated by familiarity (in that they were used to the grading system used) and rewards. Implications of this study are also discussed.

Keywords: student motivation, grades, incentives.

I. Introduction.

Imagine trying to increase your students’ motivation to learn and earn good grades. You might try using uplifting narratives, engaging activities, or innovative technology. You might hold individual conferences with students to discuss their progress and help them set goals. You might even try to bribe students in the classroom with participation points or candy. But, what if there is still a lack of motivation on behalf of the students? This is not uncommon. Some students at nearly all levels of education seem unmotivated to learn and earn good grades. These students have a tendency to be apathetic and disinterested when learning about course concepts, perspectives, theories, and ideas. Unfortunately, there is no single consistent format that teachers can use to motivate their students. In an attempt to discover a way in which teachers can

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motivate their students, this study compares the motivating power of two different systems used to grade students. A variety of research will be reviewed to set the stage for additional investigation into this critical issue faced by students and teachers.

A. Review of Literature.

The two main bodies of literature discussed here include (1) grades as motivators and (2) grading systems. The first section, which examines grades as motivators, discusses grades as intrinsic and extrinsic motivators (Deci, 1975; Reeve, 2001; White, 1959), numerous functions of grades (Covington and Mueller, 2001; Leonard, 1968), achievement goal theory (i.e., Kaplan, Middleton, Urdan, and Midgley, 2002; Urdan, 1997; Midgely et al., 1998), and the positive and negative consequences of grades (i.e., Cleary, 1990; Condry, 1977, 1987; Deci and Ryan, 1987; Mandrell, 1997; Ryan and Connell, 1989; Skinner and Belmont, 1993). This section sets the stage for the more specific topic of grading systems, which discusses a variety of approaches used to evaluate students (Gallagher, 1998; Hendrickson and Gable, 1999; Venn, 2000) and studies that have investigated how motivation plays a specific role in how grades are presented to students (Bressette, 2002; Cullen et al., 1975).

B. Grades as Motivators.

Motivation generally is divided into two separate categories: intrinsic and extrinsic. White (1959) illuminates that intrinsic motivation involves “individuals [that] are motivated by an innate, pervasive need to seek out challenging tasks that provide feelings of general competence and mastery” (p. 18). Intrinsic motivation involves “the innate propensity to engage one’s interests” and it “emerges spontaneously from organismic psychological needs, personal curiosities, and innate strivings for growth” (Reeve, 2001, p. 119). On the other hand, extrinsic motivation involves engaging in an activity to receive rewards (Deci, 1975). An extrinsic motivator can also be defined as an “environmentally created reason to initiate or persist in an action” which arises from environmental incentives and consequences (Reeve, 2001, p. 119). Extrinsic motivation functions as a means to an end in that the means is the behavior and the end is some consequence. For example, a student may study for hours for an exam simply to receive a good grade. In this case, the student is motivated by an incentive and a consequence. The incentive is receiving a good grade. Incentives always precede behavior, and excite or inhibit the initiation of a behavior. Thus, students often are motivated by the incentive of receiving a good grade before the assignment is due. Furthermore, students also may be motivated by consequences, such as doing poorly on an exam. Consequences always follow behavior and often times increase or decrease the persistence of behavior.

In addition to increasing the likelihood of certain behaviors, rewards such as grades also function to communicate about a student’s progress and competence. At the same time, grades are so powerful that they judge a student’s overall success or failure in school (Covington and Mueller, 2001; Leonard, 1968). Furthermore, Reeve (2001) points out that most people find grades to be positive reinforcers in that they increase the probability that the behavior that produced the consequences likely will reoccur in the future. For example, if a student received an A on an assignment, she or he would be more likely to study or prepare for future assignments.

With regard to motivation, grades also have been classified as being quasi-needs, which are defined as “ephemeral, situationally induced wants that create tense energy to engage in

behavior capable of reducing the built-up tension” (Reeve, 2001, p. 149). Reeve (2001) also points out that because there is often a sense of urgency about grades, they possibly can overwhelm other needs. For example, a student may claim that he or she “has to pass the test” in order to keep a scholarship or remain on the basketball team. Furthermore, since grades function as quasi-needs, there often is considerable emotional response on the part of students.

Although grades may motivate some students to learn and study course concepts, grades also have limitations in terms of motivation. A wide variety of research demonstrates that extrinsic reinforcers, such as grades, work to decrease intrinsic motivation and interfere with the process and quality of learning (Condry, 1977, 1987; Deci and Ryan, 1987). Unfortunately, grades may distract from the learning process and focus attention on the final result—that of getting a grade. Additional research demonstrates that learners who are motivated extrinsically are less likely to experience positive emotions such as enjoyment (Harter, 1978; Ryan and Connell, 1989; Skinner and Belmont, 1993), and are more likely to use a negative emotional tone, such as displaying frustration in the classroom (Garbarino, 1975). Even “good” grades can create unmotivated students. Cleary (1990) discovered that students who were rewarded with good grades became apprehensive writers. Moreover, Benware and Deci (1984) discovered that learners motivated extrinsically are often passive information processors. This passive approach ultimately may discount what a student learns, while simultaneously favor the importance of getting good grades.

Understanding the premise of achievement goal theory (AGT) provides further illumination. AGT suggests that a student’s behaviors related to both achievement and motivation can be understood by examining the reasons they adopt while engaged in academic work (Ames, 1992; Dweck and Legget, 1988; Urda, 1997). In essence, one of two messages is demonstrated in the classroom dependant upon whether the environment promotes performance or mastery goals (Ames, 1992; Pintrich, 2000). Mastery goals primarily focus on engaging in achievement behavior through developing competence (Kaplan, Middleton, Urda, and Midgley, 2002). Midgley et al. (1998) point out that an environment with mastery goals conveys that learning is important, every student is valued, effort is important, and that success comes through hard work and learning. On the other hand, performance goals primarily focus on engaging in achievement behavior to demonstrate superiority over other students. Success is demonstrated through extrinsic rewards, demonstrating ability, and doing better than other students (Midgley et al., 1998).

Environments stressing performance goals can be problematic. For instance, performance based climates are associated with decreased intrinsic motivation (Xiang and Lee, 2002; Parish and Treasure, 2003; Solomon, 1996; Treasure and Roberts, 2001). Kumar, Gheen, and Kaplan (2002) argue that performance goals can potentially lead to academic struggle. Earlier research also demonstrates the consequences of rewards and learning: rewards often focus attention on learning factual information rather than conceptual information (Benware and Deci, 1984; Boggiano et al., 1993; Flink, Boggiano, and Barrett, 1990), limit one’s thinking and problem solving skills (McGraw and McCullers, 1979), and undermine creativity (Amabile, 1985; Amabile, Hennessey, and Grossman, 1986). Furthermore, research conducted by Condry and associates (1977, 1978) has demonstrated that learners’ curiosity, interest, and mastery of a subject remain more prevalent when rewards are not involved. Interestingly, Midgley (2002) points out that the promotion of mastery goals over the school years decreases. The learning process and quality of learning are at risk when grades are used as a motivating force. However, there is another side to this story.

On the positive side, extrinsic rewards do carry advantages. Reeve (2001) mentions that “rewards can make an otherwise uninteresting task seem suddenly worth pursuing” (p. 130). For instance students already may be unmotivated because of the nature of the subject. Students that are required to take certain classes often bring an unmotivated and negative attitude into the classroom. However, teachers who can facilitate engaging discussions and involve their students in activities may be able to motivate them to learn. Furthermore, if the teacher gave the students participation points for active participation, students likely would see the task ahead of them as worth pursuing. Extrinsic motivators have been used in a variety of instances to increase socially important, yet uninteresting tasks: motivating young children to do their homework (Miller and Kelley, 1994), teaching nearsighted children to wear contact lenses (Mathews et al., 1992), and getting children to participate in recycling (Austria et al., 1993; Brothers, 1994).

Because of the many disadvantages of using grades, attempts have been made to teach without them; however, students were less motivated to study when no grades were used (Mandrell, 1997). Additional research has illuminated that using grades not only enhances students’ motivation, but allows for better differentiation among students (Bressettee, 2002). In a study of 3,400 college students, Stallings and Leslie (1970) discovered that grades serve a motivational function in that when students were asked if grades provided them the motivation to complete assigned coursework, more than 67% responded positively. Grades are not the only motivator that students receive; however, they do play a role in motivation.

Although some academics argue that grades should be abandoned, scholars have asserted that arguments against using grades are empirically unfounded (Ebel, 1974). Despite the disadvantages of extrinsic motivators, grades continue to be used for fostering motivation in classrooms. Perhaps presenting the grading system for students in a different manner can compensate for the disadvantages. In this study, such a possibility was investigated.

C. Grading Systems.

Venn (2000) discusses a variety of different systems used to grade students. For example, teachers often use competency-based grading and point systems. Competency-based or criterion-based grading requires students to attain certain skills and students are graded on achieving appropriate competency in particular skill areas. Point systems allow students to earn points (in full or partial) for completing coursework such as tests, quizzes, papers, etc. Final grades are then determined by the students’ point totals at the end of the semester. Feldman et al. (1998) mention that teachers often use point systems because it allows teachers to keep a detailed account of student work and progress, allows students to keep on track, and allows teachers to unambiguously assign final grades. Competency-based grading and point systems are the most frequently used grading systems (Hendrickson and Gable, 1999).

Other, more alternative forms of grading exist as well. Venn (2000) points out that some teachers use “multiple grading”, which means that students can earn more than one grade (i.e., one grade for performance and one for effort). Some teachers grade strictly on effort and put performance aside. Others simplify the letter grade system (i.e., A, B, C, D, and F) for a pass/fail system. Criteria are generally established for what counts as passing and failing. Another grading system is referred to as contract grading. This involves the teacher and student essentially making and signing a contract that indicates the work the student will complete in a certain amount of time. Often times contracting for a higher grade requires more work. Other teachers have used portfolio grading, which is a collection of original student work. Portfolios can be

used as the only system of grading or in addition to any type of grading system. Lastly, qualitative grading moves away from letter grade assignment and relies on narrative feedback from the teacher. The teacher might write a letter about student's performance, participation, improvement, attitude, etc. Qualitative grading can be used as a sole means of grading or with other grading systems.

Although a variety of grading systems are used, teachers from nearly all angles of education in the U.S. still experience difficulty with issues that arise around grading. A variety of projects have attempted to discover how to use and present grades in the classroom. Bressette (2002) discovered that the use of a plus/minus grading system serves as an "excellent motivator for students to continue strong efforts on all assignments and examinations right up to the last day of classes" and that "if the benefit of receiving a high grade (i.e., a B+ compared to a B) is not a strong motivator, the fear of moving to a lower grade (i.e., a B- compared to a B) from lack of effort might be an even stronger motivator" (p. 38).

Bressette's (2002) research investigated the motivating factors of using a plus/minus grading system; however, prior research has examined the effects of positive and negative incentives with regard to grading. Cullen et al. (1975) used a sample of 233 students from 14 high schools to discover how positive and negative incentives motivate students to complete assignments. The students were "either offered points (ranging from 2 to 12) on their final grade of the term for completing an assignment or threatened with loss of points (ranging from 1 to 7) for not completing an assignment" (Cullen et al., 1975, p. 277). These researchers used different point values for the classes: 0, +2, +3, +5, +6, +8, +10, +12, -1, -2, -3, -4, -5, and -7. Their results attest that "grades used as either positive or negative incentive secures greater assignment completion than when no incentive is offered" (p. 278). In essence, when either type of incentive was offered, the students were more motivated to complete their work. They also discovered that grades used as a negative incentive are more powerful than when they are used as a positive incentive. For example, having points deducted (e.g. -3) was more powerful than having points added (e.g. +3). Furthermore, the greater the negative incentive, the more likely students were to complete the assignment. For example, a student would be more motivated to complete the assignment if there was a threat of losing 5 points over losing 2 points. Interestingly, Cullen et al. (1975) mention that reasons as to why the correlation between incentive (positive or negative) and the completion of assignment was higher with negative incentives than with positive incentives has yet to be determined.

Cullen et al.'s (1975) study opens the door for further research. Although their study provides insightful results, it only used the positive and negative incentives for the final assignment of the class—and not throughout the entire semester. A semester long analysis may provide more fruitful results. Questions also remain as to why students were more motivated when a negative stimuli was presented. Asking the students themselves about their motivation and what was affecting it may provide further answers.

The current study aims to better understand the relationship between student motivation and how grades are presented (i.e., by using positive and negative incentives). This study aims to investigate two grading systems and the motivation they produce. One system will provide students with negative incentives, while the other system will provide students with positive incentives. Because grades clearly do not motivate all students, this study seeks to discover if these problems can be alleviated by exploring two different ways teachers can present grades. Based on Cullen et al.'s (1975) study, one hypothesis guides this study: Students who receive

negative incentives will exhibit higher levels of motivation than those who receive positive incentives.

II. Methods.

A. Procedures.

Two grading systems were designed for this study. These two systems were developed with the intention that one system would surface as more conducive to student motivation. Student motivation levels (dependent variable) were measured (at three points in the semester; see “Variables and Scales” section) in response to the two different types of grading systems. Since competency-based grading and point systems are most prevalent (Hendrickson and Gable, 1999), the current study is modeled around these systems.

There were two grading systems used for this study. The students who earned their grades (“earners”) received positive incentives and those who maintained their grades (“maintainers”) received negative incentives. The earners started the semester with 0 points and added points with each graded assignment, whereas the “maintainers” were given the maximum number of points available for the course at the beginning of the semester and then subtracted points from this overall total as they lost points on a graded assignment. The earners received positive incentives (i.e., the addition of points), whereas the maintainers received negative incentives (i.e., the subtraction of points).

Students in each class were given a prepared sheet of paper to record their grade for each assignment. An example of the grade sheet for the earners is provided in Table 1. An example of the grade sheet for the maintainers is provided in Table 2.

Students were asked to complete a Student Motivation questionnaire (see Appendix I) during the first week of the semester and at end of the semester. Students were also asked to complete an open ended questionnaire regarding their motivation. Participation was voluntary and extra credit was provided.

Table 1. Grade sheet for earners.

Assignments	Assignment Value	Your Score
Introductory Speech	3	+2.50
Group Impromptu	5	+4.00
Narrative Speech	10	+8.00
Total Points	100	14.50/100

Table 2. Grade sheet for maintainers.

Assignments	Assignment Value	Points Lost	Running Total
			100 points
Introductory Speech	3	-.5	99.5
Group Impromptu	5	-1.0	98.5
Narrative Speech	10	-2.0	96.5
Total Points	100		/100

B. Participants.

Six public speaking courses at a large southwestern university were selected to participate in this study. Three of the classes were designated as the “earners” and the other three were designated as the “maintainers.” A total of 101 students participated in the study; earners (n = 49) and maintainers (n = 52). Forty-eight percent (n = 48) of the participants were male and 52% (n = 52) were female. The average age of participants was 20.4 with the youngest participant being 18 and the oldest being 41. Thirty-nine percent (n = 39) of participants were freshman, 36% (n = 36) were sophomores, 16% (n = 16) were juniors, 9% (n = 9) were seniors, and 1% (n = 1) were graduate students.

The six public speaking classes were taught by three instructors. Each instructor taught one class of earners and one class of maintainers. Specific guidelines were set before the instructors began teaching their courses to ensure that each course was taught similarly and that students were treated similarly as well. For instance, assignments (i.e., speeches, papers, quizzes), in-class activities, and classroom policies (i.e., attendance, rules for late work, plagiarism, etc.) were designed in a similar manner (some of which was already a department requirement). Each instructor was given a journal and asked to record any deviations from the guidelines set out before the semester. At the end of the study, it was determined that there were no significant deviations.

C. Variables and Scales.

The hypothesis examined in this study looked at the grading system (independent variable) and students’ levels of motivation (dependent variable). Levels of motivation were measured by administering a questionnaire consisting of 16 questions that derived from the Student Motivation Scale (Beatty and Payne, 1985; Christophel, 1990). This scale was distributed at the beginning and end of the semester. This scale was used because it has acceptable reliability and validity (Beatty and Payne, 1985; Beatty et al. 1986; Christophel, 1990; Richmond, 1990). For instance, Christophel’s (1990) reliability coefficient ranged from .95 to .96 and Richmond (1990) reported alpha co-efficient of .94. The Student Motivation Scale has not only been used over the years, but expanded and improved as well. The original version, which was created by Beatty et al. (1980), has been expanded as literature measuring motivational states in students has increased. For instance, Beatty, Forst, and Stewart (1986) added bipolar adjectives to the scale, as did Richmond (1990) and Christophel (1990). Other scholars have used the scale more recently as well (i.e., Corrigan, 2004; Guzley, Avanzino, and

Bor, 2001). Previous research shows that each of the questions included in the scale are indicators of motivation (Beatty and Payne, 1985; Christophel, 1990).

An open ended questionnaire was also utilized to gain a greater understanding of the variables under examination (see Appendix II). The open-ended questionnaire was intended to get a first hand account of how the students felt about and reacted to their particular grading system. The self-reporting nature of the survey was specifically used to allow the students to express their own thoughts, feelings, and impressions about the grading systems, instead of forcing the students to rate how much of a particular feeling they may have experienced. The open ended questionnaire was distributed to the students half way through the semester.

After the open-ended scale was originally constructed, a pilot test and numerous brainstorming sessions were conducted with volunteers to revise the questionnaire, clarify questions, and suggest additional questions. Volunteers were also asked to complete the questionnaire and make suggestions regarding the clarity of questions, grammar, and wording. Their ideas and suggestions for revision were incorporated into the study and helped make the questionnaire easier to understand. After the students completed the surveys, their answers were entered into a computer and common themes for each question were identified and clustered into categories.

III. Results.

A. Quantitative Findings.

The hypothesis stated that students who receive negative incentives would exhibit higher levels of motivation than those who receive positive incentives. A one-tailed independent samples t-test showed that there was a slight difference in levels of motivation in earners ($M = 2.91$, $SD = 1.393$) and maintainers ($M = 2.49$, $SD = 1.197$)^{2 3}. Furthermore, the t-test [$t(99) = 1.620$, $p = 0.054$] shows a moderate significance. The hypothesis is subsequently marginally supported by the quantitative data.

B. Qualitative Findings.

Student motivation with regard to receiving positive or negative incentives was discovered by numerous themes that emerged from the data. These themes include (1) student satisfaction with regard to the particular grading system; (2) student dissatisfaction; (3) grades as stressors; (4) and motivation when compared to other classes. The majority of the themes demonstrate differences between the earners and maintainers; however, there are some instances in which similarities between the two groups emerge.

Student satisfaction with grading systems. One main theme that emerged from the data concerns student satisfaction with the grading systems. Deci et al. (2001) point out that satisfaction is positively related to motivation; thus, the themes of “student satisfaction with grading systems” and “student dissatisfaction with grading systems” will provide an understanding of student motivation levels. In essence, when students are more satisfied (i.e., they feel content, are in approval, or have a liking towards something in the course), they will be inclined to be more motivated.

² Note that lower Ms indicate higher levels of motivation.

³ Note that averages were used.

Mostly similarities between the earners and maintainers emerged within this theme. The students were asked how they felt about having to earn or maintain points in their class. Over half of the respondents in each grading system responded that they thought the system was “good,” “okay,” “fair,” and “they liked it.” One question that addresses satisfaction asked the students about the strengths of the grading procedures used in their particular class. First, nearly 40% (N = 41) of the students responded that knowing their grade and progress in the class were strengths. These students likely reported this because they were provided a grade sheet to keep track of their points. However, more maintainers (N = 25) than earners (N = 16) remarked that knowing where they stood in the class was a strength. This may be the case because the maintainers self-reported that their grading system was unfamiliar and the earners consistently remarked that their grading system was similar to their other classes. These feelings of unfamiliarity with the grading system may have prompted the maintainers to direct additional attention towards keeping track of their own grades and to report that they understood what their grade was in the class on a consistent basis. Furthermore, this unfamiliar system of having points deducted, or receiving a negative incentive likely caused the stress reported by the maintainers, which ultimately may have motivated the students to pay more attention to their grade and track their progress more consistently.

In addition to consistently knowing their grade in the class, another strength emerged for the maintainers. One third of the maintainers self-reported that a strength of the grading procedures used in the class was that everyone started with an A, or the maximum amount of points. Some of the students’ comments included “The fact that you start with an A in the class gives you a more positive outlook,” “It’s more positive than having to work up to an A,” “It’s better than earning them,” and “It lets you focus more on the work than on what grade you currently have or need to get.” Factors such as satisfaction with the overall grading system, starting with an A, and committing extra time to understanding an unfamiliar system likely contributed to the motivational levels of the students under this system. However, levels of student dissatisfaction likely played a role in motivational levels as well.

Student dissatisfaction with grading systems. In addition to student satisfaction with grading systems, signs of dissatisfaction emerged as well. When a student is dissatisfied (i.e., they feel discontent, are in disapproval, or have a disliking towards something in the course) they will be inclined to be less motivated. Both similarities and differences between the earners and maintainers emerged. Students were asked to list the weaknesses of the grading procedures used in their class. Some students in both the maintainer (N = 15) and earner (N = 13) groups reported that there were no weaknesses. However, other respondents did list areas of dissatisfaction. Over half of the earners (N = 29) and 30% of the maintainers (N = 16) mentioned that they did not like specific aspects of the course. For instance, students wrote that there was “too much busy work,” that the pop quizzes “don’t help with learning,” and that points should not be deducted for being absent.

Each student was also asked to describe their teacher’s grading procedures. Fourteen percent (N = 8) of the earners and 6% (N = 3) of the maintainers described the grading practices as unfair and harsh. Although this is not a huge difference in responding with dissatisfaction, these findings may assist in discovering the overall motivating factors with regards to these grading systems in the end. Additional dissatisfaction illuminates that the particular grading systems were difficult to understand for certain students. Only one earner reported that the grading system takes time to get used to. However, over 10% of the maintainers reported that their grading system was hard to understand—likely because this system is rarely used. For

instance, some of the students commented that there is a “lack of familiarity” and it is “a little hard to understand.” Again, the maintaining system emerges as more difficult to understand, which will be further discussed later. Furthermore, nearly one-fourth of the maintainers were dissatisfied that there was no way to get lost points back, whereas 5% of the earners mentioned that it was difficult to “catch up” or “earn more points.” Since Deci et al. (2001) point out that satisfaction is positively related to motivation, it can be surmised that factors such as satisfaction with the overall grading system (i.e., starting with an A, familiarity with a particular system, etc.) and dissatisfaction (i.e., unfamiliarity with a system, etc.) contribute to the motivational levels of the students.

Grades as stressors. Throughout this analysis, grades seem to cause stress for the majority of students in one way or another. Stress and motivation are related (Lazarus, 1966). Stress is a motivationally related response to particular environments or conditions. Interestingly, when one experiences stress (e.x., one’s possible reaction to a new system of rules), the nervous system releases epinephrine (or adrenaline), which leads to increased heart rate, blood pressure, and respiration rate. Furthermore, when one experiences stress, cortisol (a hormone) is released, and when cortisol levels are high, problem solving is significantly impaired (Kirschbalm et al., 1996). Thus, understanding grades as stressors will help further explain students’ motivation levels.

Although similar results between the two groups were found when asking about grades, differences emerged when asking about particular grading systems. Nearly half of the sample (N = 45) responded that some type of stressful emotion runs through their body. Some of the answers included “tension,” “fear,” “paranoia,” “anxiety,” “discomfort,” “anger,” and “anxious.” Very few students remarked that positive feelings result when thinking about grades.

When the students were asked how they felt about having to earn or maintain their grade, the results demonstrate that the maintainers reported more stress and negativity with regard to their specific grading system. Numerous respondents stated that maintaining points made them feel “nervous” and “pressured.” Furthermore, additional comments illuminate why this stress may arise: “I can’t do anything to make it higher,” “There’s no way you can go but down,” and “You can easily give up when you feel that you lose points.” Although the earners and maintainers are being graded in the same ways, the maintainers pick up on the negative slant of their grading system and eventually feel more stress. It appears that stress may contribute to a student’s level of motivation.

Motivation when compared to other classes. Students were also asked to compare and contrast their motivation to earn/maintain their grade in the class in which they received the positive or negative incentives with their other classes. Slight differences between the two groups were discovered. Slightly more maintainers (N = 19) than earners (N = 16) reported that they were more motivated to maintain their grade in the class under investigation than in their other classes. The same amount of earners and maintainers reported that their motivation was the same as other classes. Lastly, more earners than maintainers (20% versus 13%) reported that they were less motivated in the class under investigation in the study compared to their other classes (though this could relate to course content). Overall, more maintainers reported being more motivated when compared to other classes.

Numerous themes have emerged as important components of this analysis: satisfaction with the overall grading system, dissatisfaction, levels of stress, and motivation compared to other classes. These findings point out that students were motivated in different ways.

IV. Discussion.

A. Interpretation.

In order to improve some of the motivational and grading system problems presented to teachers, an attempt was made to better understand student motivation by investigating the ways teachers assign grades. Although scholars (Cullen et al., 1975) have examined the impact of positive and negative incentives on students for single assignments, this project consisted of a semester-long study that examined the impact of positive and negative incentives on student motivation. Furthermore, this study utilized both quantitative and qualitative methods to gain a rich understanding of this issue.

The hypothesis in the current study stated that upon completion of the semester, students who received negative incentives would exhibit higher levels of motivation than those who received positive incentives. The results of the quantitative questionnaire were marginally supported in that those who received negative incentives were slightly more motivated than those who received positive incentives. The difference between the two groups corresponds with Cullen et al.'s (1975) findings in that those who received negative incentives were overall, slightly more motivated. However, the results of the qualitative questionnaire demonstrate more descriptive results in that students were motivated in different ways. A discussion of the similarities and differences between the two groups will further illuminate this finding.

Similarities between earners and maintainers. There are numerous points of similarity between the two groups: (1) grades in general do create stress and (2) knowing one's progress and grade in a class is a strength. First, the fact that grades caused stress for students in this study is notable. Although motivation and stress are related (Lazarus, 1966), a more significant issue exists: stress is likely one of the major confounding variables that contributes to the interference with learning. For instance, Kirschbalm et al. (1996) point out that stress can significantly impair problem solving. This is problematic when considering that problem solving is one of the fundamental skills that students at nearly all levels of education need to develop.

A second area of commonality between the two groups of students demonstrates that knowing their progress and grades in the class gave them a sense of satisfaction and motivation. As mentioned earlier, the students were given grade sheets at the beginning of the semester and required to track their grades. The students in both groups were more satisfied and motivated because of this requirement. On a pragmatic level, this study demonstrates that teachers can potentially increase their students' levels of satisfaction with the course by handing out pre-prepared grade sheets at the beginning of the semester. However, this can potentially create more stress on a student, because of the additional focus on grades. Although there were two areas of commonality between the earners and maintainers with regards to student motivation, a variety of differences between the two groups emerged.

Differences between earners and maintainers. Four points of discussion are noteworthy: (1) satisfaction with the system; (2) unfamiliarity as motivation; (3) negativity as motivation; and (4) attention focused on grades.

The maintainers appeared to be more satisfied with their system. Deci et al. (2001) point out that satisfaction is positively related to motivation; thus a discussion of students' satisfaction is noteworthy. One reason why the maintainers saw their system as more satisfying is because the teacher's grading practices were more often described as "good" and "fair." Interestingly, the students were graded the same way in every class; however, the grades were presented in

different ways. In addition, any stress involved in maintaining grades seems to coincide with strong opinions that the instructors' grading procedures are still good and fair. The maintainers were further satisfied and motivated by starting out with an A. A large group of the maintainers reported that a strength of the grading procedures used in the class was that everyone started with an A, or the maximum amount of points. In addition, maintainers reported that they were more motivated in this class than in their other classes.

The maintainers consistently self-reported that their grading system was unfamiliar. The feelings of unfamiliarity with the grading system may have prompted the maintainers to direct additional attention towards keeping track of their own grades, and resultantly report that they understood what their grade was in the class on a consistent basis. Furthermore, this unfamiliar system of having points deducted, or receiving a negative incentive likely caused the stress reported by the maintainers, which ultimately may have motivated the students to pay more attention to their grade and track their progress more consistently than the earners. In addition, these results correspond with Bressette's (2002) assertion that "if the benefit of receiving a high grade (i.e., a B+ compared to a B) is not a strong motivator, the fear of moving to a lower grade (i.e., a B- compared to a B) from lack of effort might be an even stronger motivator" (p. 38). Thus, the maintainers could have been motivated by the fact that their grade could further drop. On the other hand, the earners were to some degree motivated by familiarity in that their grading system was much more common, yet still worked as a motivating factor in the course.

Overall, the earners and maintainers expressed some kind of dissatisfaction with their grading systems. Nearly a quarter of the maintainers were dissatisfied that there was no way to get lost points back, whereas only 5% of the earners mentioned that it is difficult to "catch up" or "earn more points." This dissatisfaction may work in a manner that motivates the maintainers. Because the negative incentive bothers the student and makes her or him feel behind, she or he is more likely to reverse this pattern and attempt to maintain points in the future.

Another point of divergence rests in the fact that the maintaining system may also have focused students' attention away from areas of the course that were considered unpleasant. Over half of the earners (N = 29) and only 30% of the maintainers (N = 16) mentioned that they did not like specific aspects of the course. Interestingly, the maintainers' attention may have been more focused on the grading system at hand, and not at finding problems with other areas of the course. This facet of the study demonstrates how the maintaining system works to focus students' attention on grades and points, and away from other areas, such as "having too much work" or believing that "too many quizzes are given." This system also potentially kept the maintainers from focusing on learning. Grades and a new system of being graded were emphasized so much, that the actual task at hand—that of learning—may have been disrupted. It is likely that the maintaining system de-emphasized mastery goals or engaging in achievement behavior through developing competence (Kaplan, Middleton, Urdan, and Midgley, 2002). Grades (and subsequently performance goals) were stressed over goals of a mastery goal-oriented environment: learning is important, every student is valued, effort is important, and that success comes through hard work and learning. This is problematic in that performance goals can potentially lead to academic struggle (Kumar, Gheen, and Kaplan, 2002). However, grades were also stressed for the earners, but not to the same degree (i.e., the earners better understood their grading system, therefore there was less time spent explaining how the grading system worked).

Although the quantitative results of this study are in slight alignment with Cullen et al.'s (1975) study, the qualitative results illuminate how the two types of incentives motivated the

students differently. Both earners and maintainers were motivated by stress and understanding their progress in the class. However, the maintainers were motivated by satisfaction (i.e., saw grading practices as fair; liked starting with an A), unfamiliarity (i.e., had to learn a new grading system). They were also motivated by the fear of punishment (i.e., the threat of losing points) and stress. On the other hand, the earners were to some degree driven by familiarity in that they were used to the grading system used.

B. Implications.

Eiszler (1983) asserted that “the evidence that grades derive their meaning, in part, from the context in which they are assigned, implies, however, that all grading systems are not equally useful in this regard” (p. 19). This assertion was clearly illuminated in this study. The maintainers in this study had to deal with a negative style of being judged, and were often driven by this negativity. This negativity may ultimately change the way these students handle and perceive the subject matter under investigation. In addition, most of the students were extrinsically motivated by grades in this study.

If the maintaining system is widely adapted, students likely will adjust to the system over time, as the earners have; however, after spending time adapted to a grading system, students’ motivation in wanting and working for good grades may decrease as it did for the earners. Thus, a longitudinal study examining how grading systems are adapted to by students and how this adaptation may alter levels of motivation is recommended. However, this study did allow for a rich examination of how grading systems motivate students in particular ways.

Although this study discovered that the two grading systems motivated students in different ways, the way in which they were motivated was problematic in that mastery goals were left on the backburner and extrinsic rewards were stressed. A wide variety of research demonstrates that extrinsic rewards, such as grades, work to decrease intrinsic motivation and interfere with the process and quality of learning (Condry, 1977, 1987; Deci and Ryan, 1987; Kumar, Gheen, and Kaplan, 2002; Parish and Treasure, 2003; Solomon, 1996; Treasure and Roberts, 2001; Xiang and Lee, 2002). Unfortunately, grades may distract from the learning process and focus attention on the final result—that of getting a grade. Additional research demonstrates that learners who are motivated extrinsically are less likely to experience positive emotions, such as enjoyment (Harter, 1978; Ryan and Connell, 1989; Skinner and Belmont, 1993). Thus, new ways to motivate students should be sought.

V. Conclusions.

A. Limitations.

While this study did provide noteworthy findings for the study of student motivation and grading, there are limitations. One limitation of the current study is the sample size. A larger sample size may have yielded statistically more significant results for the hypothesis that those who received negative incentives would be more motivated than those who received positive incentives. A second limitation of the study had to do with the fact that the students were examined in a controlled environment. They knew that they were in a research project examining grades. There may have been too much emphasis placed on grades throughout the semester (i.e., students had to fill out surveys, students asked their teacher about the project, students were

required to keep track of their grade with a grade sheet, etc.). Finally, this study only used public speaking classes. Including courses in different subject matters could have had an impact on how students view the course itself, therefore impacting how motivated the students are and how they perceive their teachers. However, a strength to using students in public speaking classes is that it is a required course for all students, which alleviates the concern that students self-selected this course and consequently would begin with a high degree of motivation.

B. Future Research.

Future research should examine alternative ways in which students can be motivated. As mentioned, future studies should use a larger sample, as well as different types of courses. With a larger sample, it would be appropriate to retest the hypothesis to examine if the findings are significant. Including students from different types of courses, such as math, science, English, and electives might have an impact on the level of motivation for the student. The level of motivation the student feels at the beginning of the semester towards a particular course may impact that student's level of motivation throughout the course.

Scholars should also consider comparing how different grading systems (i.e., contract grading, point systems, qualitative grading) motivate students both intrinsically and extrinsically. Additionally, since it is evident that grades work as extrinsic motivators, research needs to look more at how intrinsic motivators can enhance students' learning experiences, by not only inspiring and motivating the students, but also by increasing students' interest in the subject. Some questions that still need to be addressed might include: how can both mastery and performance goals be optimally implemented while using both intrinsic and extrinsic rewards? How can new systems of grading be invented to successfully motivate students? How is teacher-student interaction influenced by the ways teachers assign grades? By addressing some of the suggestions for future research, we can hopefully discover ways to enhance the learning experience for students in the classroom.

Author Notes

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Appendix I

Questionnaire

Demographics:

Sex: Male Female Age: _____ Major: _____

Year in School: Freshman Sophomore Junior Senior Other _____

The following questionnaire is designed to assess your motivation in the course. Please circle the number toward either word which best represents your feelings.

Example: If you feel very empowered, you would circle the number 1 since it is the number closest to the word that best represents your feelings.

	Empowered	1	2	3	4	5	6	7	Unempowered
1.	Motivated	1	2	3	4	5	6	7	Unmotivated
2.	Interested	1	2	3	4	5	6	7	Uninterested
3.	Involved	1	2	3	4	5	6	7	Uninvolved
4.	Not stimulated	1	2	3	4	5	6	7	Stimulated
5.	Want to study	1	2	3	4	5	6	7	Don't want to study
6.	Inspired	1	2	3	4	5	6	7	Uninspired
7.	Unchallenged	1	2	3	4	5	6	7	Challenged
8.	Uninvigorated	1	2	3	4	5	6	7	Invigorated
9.	Unenthused	1	2	3	4	5	6	7	Enthused
10.	Excited	1	2	3	4	5	6	7	Not excited
11.	Aroused	1	2	3	4	5	6	7	Not aroused
12.	Not fascinated	1	2	3	4	5	6	7	Fascinated
13.	Dreading it	1	2	3	4	5	6	7	Looking forward to it
14.	Important	1	2	3	4	5	6	7	Unimportant
15.	Useful	1	2	3	4	5	6	7	Useless
16.	Helpful	1	2	3	4	5	6	7	Harmful

Appendix II

Questionnaire

#_____

Demographics:

Sex: Male Female Age: _____ Major: _____

Year in School: Freshman Sophomore Junior Senior Other _____

Directions: Please answer the following questions being as descriptive as possible.

Did having to earn/maintain your grade make a difference in your motivation in this course? If so, in what ways? If not, explain why.

Compare and contrast your motivation to earn/maintain your grade in this class with other classes you are taking.

When someone says the word *grade* or *grading*, what words, phrases or feelings, immediately pop into your mind?

How do you feel about having to earn/maintain points in this class?

What are the strengths of the grading procedures used in this class?

What are the weaknesses of the grading procedures used in this class?

References

- Amabile, T. M. (1985). Motivation and creativity: Effect of motivational orientation on creative writers. *Journal of Personality and Social Psychology*, 48, 393-399.
- Amabile, T. M., Hennessey, B. A., and Grossman, B. S. (1986). Social influences on creativity: The effects of contracted-for reward. *Journal of Personality and Social Psychology*, 50, 14-23.
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84, 261-271.
- Austira, J., Hatfield, D. B., Grindle, A. C., and Baily, J. S. (1993). Increasing recycling in office environments: The effects of specific, informative cues. *Journal of Applied Behavior Analysis*, 26, 247-253.
- Beatty, M. J., Behnke, R. R., and Froelich, D. L. (1980). Effects of achievements incentive and presentation rate on listening comprehension. *Quarterly Journal of Speech*, 66, 193-200.
- Beatty, M. J., Forst, E. C., and Stewart, R. A. (1986). Communication apprehension and motivation as predictors of public speaking duration. *Communication Education*, 35, 143-146.
- Beatty, M. J., and Payne, S. K. (1985). Is construct differentiation loquacity?: A motivational perspective. *Human Communication Research*, 11, 605-612.
- Benware, C., and Deci, E. L. (1984). The quality of learning with an active versus passive motivational set. *American Educational Research Journal*, 21, 755-765.
- Bressette, A. (2002). Arguments for plus/minus grading: A case study. *Educational Research Quarterly*, 25, 29-41.
- Brothers, K. J. (1994). Office paper recycling: A function of container proximity. *Journal of Applied Behavior Analysis*, 27, 153-160.
- Christophel, D. M. (1990). The relationship among teacher immediacy behaviors. Student motivation, and learning. *Communication Education*, 39, 323-340.
- Cleary, L. M. (1990). The fragile inclination to write: Praise and criticism in the classroom. *English Journal*, 79, 22-28.
- Condry, J. (1977). Enemies of exploration: Self-invited versus other-initiated learning. *Journal of Personality and Social Psychology*, 35, 459-477.
- Condry, J. (1987). Enhancing motivation: A social development perspective. *Advances in Motivation and Achievement: Enhancing Motivation*, 5, 23-49.

Covington, M. V., and Leonard, K. J. (2001). Intrinsic versus extrinsic motivation: An approach/avoidance reformulation. *Educational Psychology Review*, 13, 157-176.

Corrigan, M. W. (2004). *An empirical measurement of interpersonal community engagement: Implications to youth communication behaviors and the instructional setting*. Unpublished dissertation, West Virginia University.

Cullen, F. T., Cullen, J. B., Hayhow, V. L., and Plouffe, J. T. (1975). The effects of the use of grades as an incentive. *The Journal of Educational Research*, 68, 27-279.

Deci, E. L. (1975). Motivational processes affecting learning. *American Psychologist*, 41, 1040-1048.

Deci, E. L., and Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39-80). New York: Academic Press.

Deci, E. L., Ryan, R. M., Gagne, M., Leone, D. R., Usunov, J., Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former eastern block country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin*, 27, 930-942.

Dweck, C. and Leggett, E. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.

Ebel, R. L. (1974). Shall we get rid of grades? *Measurement in Education*, 5, 1-6.

Eiszler, C. (1983). The meaning of college grades in three grading systems. *Educational Research Quarterly*, 8, 12-19.

Feldman, A., Alibrandi, M., and Kropf, A. (1998). Grading with points: The determination of report card grades by high school science teachers. *School Science and Mathematics*, 98, 140-148.

Flink, C., Boggiano, A. K., and Barrett, M. (1990). Controlling teaching strategies: Undermining children's self-determination and performance. *Journal of Personality and Social Psychology*, 59, 916-924.

Gallagher, J. D. (1998). *Classroom assessment for teachers*. Columbus, OH: Merrill.

Garbarino, J. (1975). The impact of anticipated reward upon cross-aged tutoring. *Journal of Personality and Social Psychology*, 32, 421-428.

Guzley, R. M., Avanzino, S., and Bor, A. (2001). Simulated computer-mediated/video-interactive distance learning: A test of motivation, interaction satisfaction, delivery, learning, and perceived effectiveness. *Journal of Computer Mediated Communication*, 6 (3).

Harter, S. (1978). Pleasure derived from optimal challenge and the effects of extrinsic rewards of children's difficulty level choices. *Child Development*, 49, 788-799.

Hendrickson, J. M., and Gable, R. A. (1999). Can everyone make the grade? Some thoughts on student grading and contemporary classrooms. *High School Journal*, 82, 248-254.

Hufton, N. R., Elliot, J.G., and Illushin, L. (2003). Teachers' beliefs about student motivation: Similarities and differences across cultures. *Comparative Education*, 39, 267-289.

Kaplan, A., Middleton, M., Urdan, T. and Midgley, C. (2002). Achievement goals and goal structures. In C. Midgley (Ed.), Goals, goal structures, and patterns of adaptive learning (pp. 21-53). Mahwah, NJ: Erlbaum.

Kirschbaum, C., Wolf, O. T., May, M., Wippich, W., and Hellhammer, D. H. (1996). Stress and treatment-induced elevations of control levels associated with impaired declarative memory in healthy adults. *Life Sciences*, 58, 1475-1483.

Kohn, A. (1993). Punished by rewards: The trouble with gold stars, incentive plans, A's, praise, and other bribes. Boston: Houghton Mifflin.

Kumar, R., Gheen, M. H., and Kaplan, A. (2002). Goal structures in the learning environment and students' disaffection from learning and schooling. In C. Midgley (Ed.), *Goals, goal structures, and patterns of adaptive learning* (pp. 143-174). Mahwah, NJ: Erlbaum.

Lazarus, R. S. (1966). Psychological stress and the coping process. New York: McGraw-Hill.

Leonard, G. B. (1968). Education and ecstasy. Delacorte, New York.

Mathews, J. R., Hodson, G. D., Crist, W. B., and LaRoche, G. R. (1992). Teaching young children to use contact lenses. *Journal of Applied Behavior Analysis*, 25, 229-235.

McGraw, K. O., and McCullers, J. C. (1979). Evidence of detrimental effects of extrinsic incentives on breaking a mental set. *Journal of Experimental Social Psychology*, 15, 285-294.

Midgley, C. (2002). Goals, goal structures, and patterns of adaptive learning. Mahwah, NJ: Erlbaum.

Midgley, C. et al. (1998). The development and validation of scales assessing students' achievement goal orientations. *Contemporary Educational Psychology*, 23, 113-131.

Miller, D. L., and Kelley, M. L. (1994). The use of goal setting and contingency contracting for improving children's homework performance. *Journal of Applied Behavior Analysis*, 27, 73-84.

Parish, L. E., and Trasure, D. C. (2003). Physical activity in physical education: Influence of the motivational climate and perceived ability. *Research Quarterly for Exercise and Sport*, 74, 173-182.

Docan, A. N.

Pintrich, P. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of Educational Psychology*, 92, 544-555.

Reeve, J. (2001). Understanding motivation and human emotion (3rd ed.). Orlando, FL: Harcourt.

Richmond, M. J. (1990). Communication in the classroom: Power and motivation. *Communication Education*, 39, 181-195.

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

Skinner, E. A., and Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85, 571-581.

Solmon, M. A. (1996). Impact of motivational climate on students' behaviors and perceptions of a physical education setting. *Journal of Educational Psychology*, 88, 731-738.

Stallings, W. M., and Leslie, E. K. (1970). Student attitudes toward grades and grading. *Improving College and University Teaching*, 18, 66-68.

Treasure, D. C., and Roberts, G. C. (2001). Students' perceptions of the motivational climate, achievement beliefs, and satisfaction in physical education. *Research Quarterly for Exercise and Sport*, 72, 165-175.

Urduan, T. (1997). Achievement goal theory: Past results, future directions. In M. Maehr and P. R. Pintrich (eds.), *Advances in motivation and achievement* (Vol. 10, pp. 99-141). Greenwich, CT: JAI Press.

Venn, J. (2000). *Assessing students with special needs* (2nd ed.). Columbus: Merrill Education.

Xiang, P., and Lee, A. (2002). Achievement goals, perceived motivational climate, and students' self-reported mastery behaviors. *Research Quarterly for Exercise and Sport*, 73, 58-65.