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The Relationship Between Attendance and Grades

in the College Classroom.*

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Abstract

This study compared the attendance records of students against their test score averages for students at four institutions across multiple sections of several different courses over a fourteen year period (N = 1617). Results indicated that attendance significantly influences test score averages for students across sections and institutions (R^2 = .181). Other results indicated that the same relationship holds when controlling for institutional, course subject, and whether an attendance policy was enforced. Implications for these findings in terms of approaches to attendance policy making are discussed.

Introduction

I have often stated in my classes my belief that attendance is related to grades, that students who attend classes do better. Still challenges from students regarding my attendance policies have continued. Students can and often do provide reasons for not attending class, including other responsibilities and priorities such as work or family obligations. They may choose not to attend class due to incompatible goals, motivations, or expectations which are becoming more a part of the culture of education (see Rochford, 2001).

Yet, like other teachers I continued to require attendance based on the belief that a relationship exists between attendance and grades. When I was undergoing teacher-training as a graduate student, my mentors often repeated this rule as commonsense advice regarding class attendance. However, empirical evidence does not always support commonsense beliefs. Given student expectations, such evidence may be required to provide motivation for class attendance.

The purpose of this study was to determine whether there is a relationship between attendance and grades in the college communication classroom. Secondarily, this study was designed to investigate whether the existence of an enforced attendance policy influenced the relationship between attendance and test scores. To accomplish the goals of the study, I will analyze attendance records and assignment grades of students collected since 1989.

Review of Literature

Several studies have investigated the relationship between attendance and grades. For example, Silvestri (2003) found a significant but weak negative correlation between the number of absences and course grades for students who missed three or fewer classes. However, for students who missed four or more classes, the author found a significant and strong negative correlation between the number of absences and course grades. Silvestri's study was conducted on pre-service teaching students in a teaching methods class. Craig (1990) found similar results in a first-year composition course at a community college (see also Davenport, 1990).

Findings of these studies are fairly consistent, regardless of the course subject or level of student. For example, Callahan (1993) found a relationship between attendance and grades in basic mathematics courses (see also Thomas & Higbee, 2000). Van Blerkom (1992) found a moderate correlation between attendance and grades in undergraduate psychology courses. Hammen and Kelland (1994) found similar results in introductory human physiology. Brown, Graham, Money and Rakoczy (1999) also found similar results among nursing students. In addition, the level of the student does not seem to influence the relationship between attendance and grades. Fjortoft, Bentley, Crawford and Russell (1993) examined first-year doctoral pharmacy students and found a significant positive correlation between regular attendance and course grades. The results from Fjortoft and colleagues held true only for minority students,

suggesting that other issues may influence student performance at higher levels. Indeed, as Thomas and Higbee (2000) point out, academic autonomy was consistently related to student performance. Academic autonomy may influence student motivation, which may differ from lower to upper level students or by academic perseverance (Van Blerkom, 1996).

In an earlier study, Van Blerkom (1992) found that class attendance decreased from the beginning of the semester to the end. Van Blerkom (1996) suggested such findings may indicate that students may be motivated to persevere if they believe they can accomplish the tasks required in the course.

Additionally, motivation to attend classes regularly may be influenced by social support. For example, Jing and Mayer (1995) discovered that single-parents enrolled in introductory chemistry courses at a culturally diverse community college did not receive the highest letter grade, unlike students without the added responsibility of single-parenthood. The authors did find a relationship between class attendance and final grade. Schuetze and Slowey (2002) suggest that participation in class is more difficult for non-traditional students without institutional and social support.

Younger students may also require social support to deal with the transition into higher education. Haggis and Pouget (2002) found that first-year 17 to 18 year-old students needed social support to overcome separation and adjust to academic life. Indeed, Packham and Miller (2000) suggest that peer-based social support greatly influences academic motivation and performance. The existence of these social support networks and systems may greatly influence students regular attendance in class.

Researchers have also observed that immediacy and perceived teacher attentiveness also serve as external motivators for class attendance. Fung and Carr (2000) observed that students

attended face-to-face tutorials in a distance learning environment as a matter of preference. More directly, Brooks and Rebeta (1991) found that grades and attendance decreased the further from the front of the class male and female students sat.

Furthermore, tactics performed by the teacher to increase attendance also serve as external motivators. Moore (2003) discovered that class attendance is influenced by whether students receive points for attending. The author found that even without the motivation of points for attending class, there is a strong positive correlation between attendance and grades. Similarly, Shimoff and Catrina (2001) found that students who signed in at each class meeting attended more classes and scored higher grades on quizzes. Levine (1992) discovered that there were significantly more absences when attendance was not required. Davenport (1990) found that attendance and grade point averages dropped when attendance was no longer required.

These findings suggest that there is a relationship between attendance and grades in classes throughout several disciplines, and that grades will be influenced by an enforced attendance policy. Therefore, the following hypotheses are proposed:

H_1 Students' test score averages will be significantly and negatively influenced by number of absences.

H_2 There is significant difference in the relationship between number of absences and test score average for students required to attend classes versus students not required to attend classes.

Methods

The participants were 1,617 students at four different schools, in nine different subjects, in 64 distinct sections. Average class size was 25.34 students. The schools represented include a research extensive public university in the South, a midwestern research intensive school, a

southwestern research intensive school, and a large metropolitan community college. The subjects taught included performance/skills based courses: Public Speaking, Advanced Public Speaking, Introduction to Communication, Foundations of Communication, and Business and Professional Communication. Other courses taught included theoretical courses: Interpersonal Communication, Conduct of Communication Inquiry, Language and Communication Theory, and Persuasion. Attendance data were collected for classes through either roll call or sign-in sheet. The average number of class days missed for the entire sample was 2.65. Records for all classes were kept in the form of computer spreadsheet datafiles. The participants included all students for which records were kept. The reliability of the test scores and test score averages was sufficiently high ($\alpha = .88$). The test score average for all students in the sample was 81.17. Therefore, these records provide data for testing the relationship between attendance and test scores.

<u>Results</u>

First, I tested the relationship between the number of absences and test score averages for 1,588 students for years 1989 through 2003. Data screening led to the elimination of 29 cases. Although the sample involved combined cohorts, both the attendance policies and testing procedures were consistent. Simple linear regression indicated that number of absences significantly influenced test score averages for all students, $r = -.425$, $R^2 = .181$, $F(1,1586) = 349.89$, $p < .001$ (see Figure 1).

Given the concern that the student bodies may have considerably different characteristics between institutions, I also tested for a relationship among students by institution. At the large southern research extensive university, for the years between 1989 and 1992, correlation tests revealed a moderate negative relationship between the number of absences and test score

Attendance by Test Average Scatterplot

All Students through Spring 2003
(r = -.425, p < .01, N = 1588)
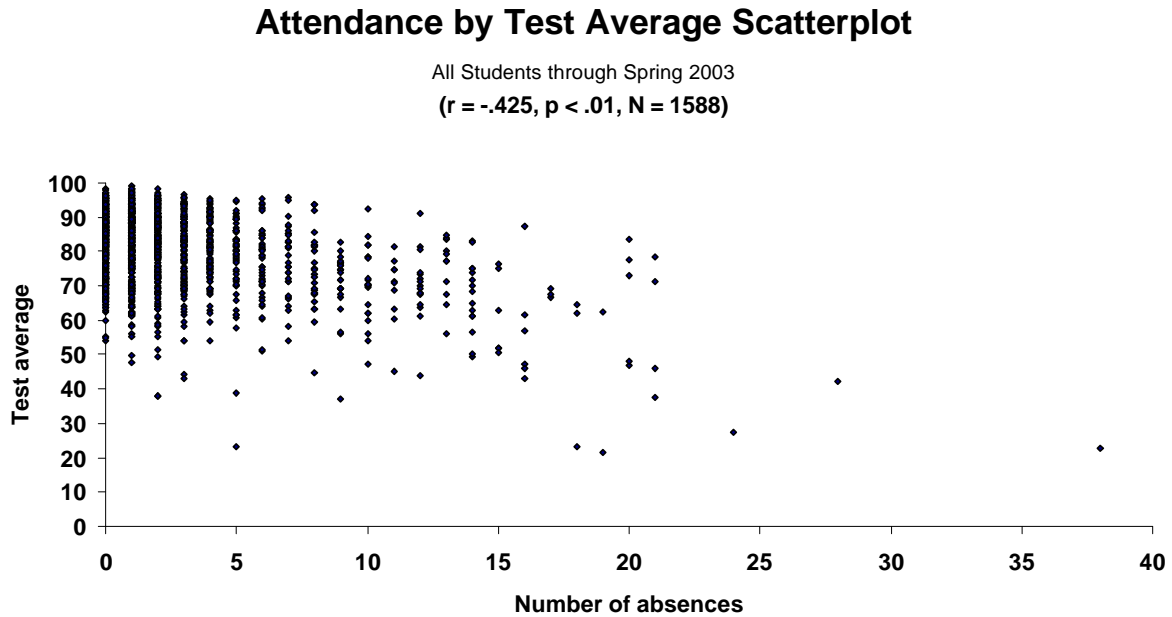
Figure 1. Attendance by test average scatterplot for all students.

averages, $\underline{r}$ = -.319, $\underline{p}$ < .01, $\underline{n}$ = 316. For this group, the test score average was 79.97 ($\underline{SD}$ =

9.76), while the average number of absences was 1.41 ($\underline{SD}$ = 1.99). At the same school, for the

years between 1999 and 2001, correlation tests revealed a moderate, negative relationship

between the number of absences and test score averages, $\underline{r}$ = -.362, $\underline{p}$ < .01, $\underline{n}$ = 627. For this

group, the test score average was 87.54 ($\underline{SD}$ = 6.74), while the average number of absences was

2.02 ($\underline{SD}$ = 2.26). For that school as a whole, correlation tests revealed a weak but significant

negative relationship between the number of absences and test score averages, $\underline{r}$ = -.249, $\underline{p}$ < .01,

$\underline{n}$ = 943 (see Figure 2). For all students at that school, the average number of absences was 1.82

($\underline{SD}$ = 2.19), and the average test score was 84.94 ($\underline{SD}$ = 8.63). It might be noteworthy that

between the years 1989 and 2001, the school increased its entrance requirements, which may

have had an effect on overall test score average increases found in this data.
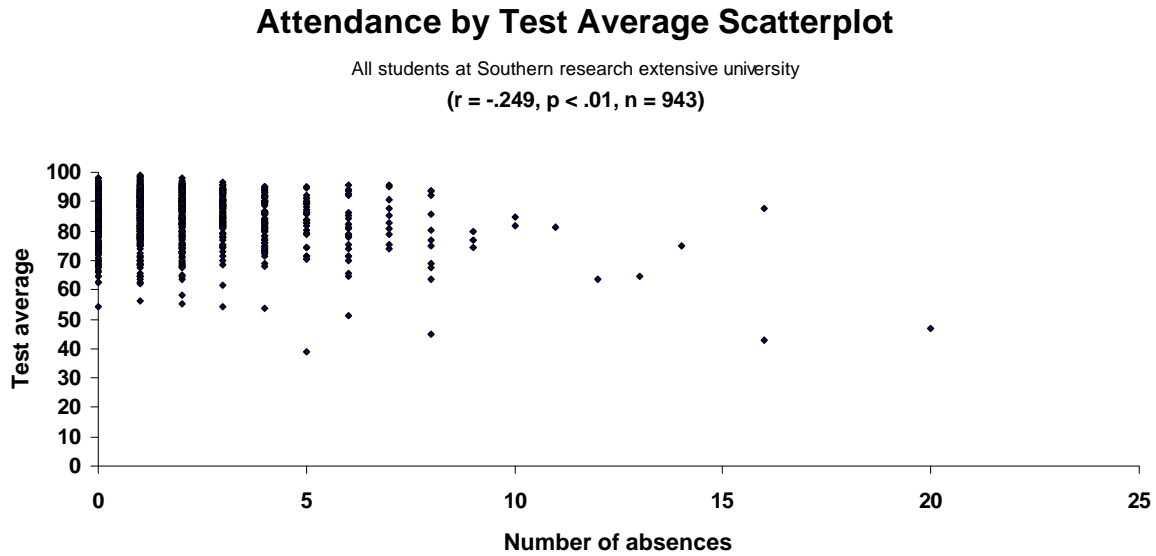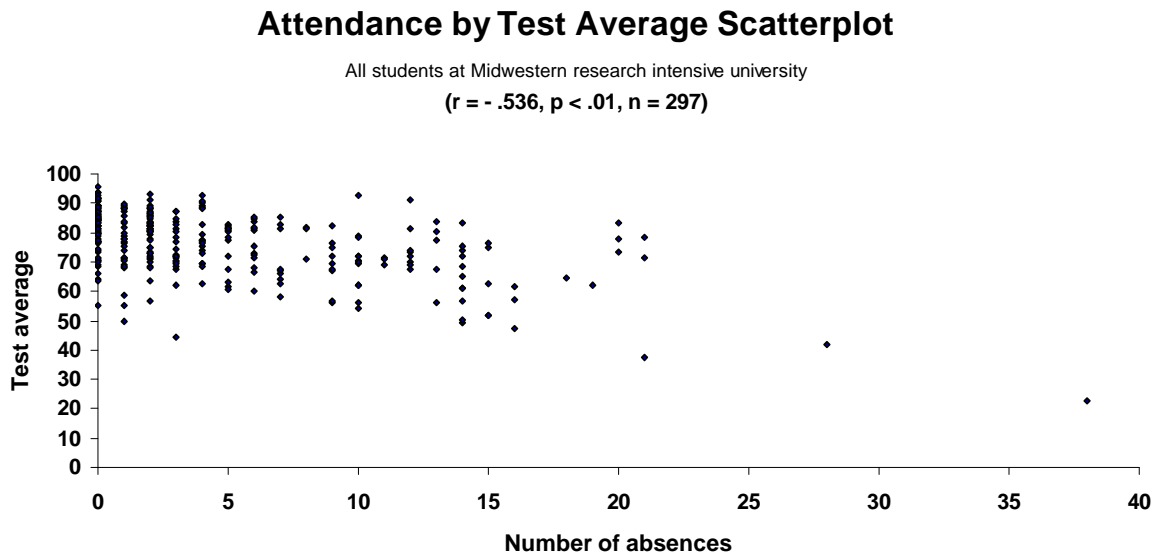
Attendance by Test Average Scatterplot

All students at Southern research extensive university

(r = -.249, p < .01, n = 943)

Figure 2. Attendance by test average scatterplot for students at the southern university.

At the large midwestern research intensive school, for the years between 1992 and 1995, correlation tests revealed a strong negative relationship between the number of absences and test score averages, $\underline{r}$ = - .536, $\underline{p}$ < .01, $\underline{n}$ = 297 (see Figure 3). For students at that school, the average number of absences was 4.69 ($\underline{SD}$ = 5.63), while the average test score was 76.20 ($\underline{SD}$ = 10.93). The same attendance policy was enforced at both the southern and midwestern schools. However, to directly compare these two schools, subject matter was controlled. The relationship between absenteeism and test score average was strong ($\underline{r}$ = -.504, $\underline{p}$ < .01, $\underline{n}$ = 940). For the tested course, the average number of absences was 2.68 ($\underline{SD}$ = 3.89), while the test score average was 82.63 ($\underline{SD}$ = 9.76). The course which was tested was a sophomore-level, general education, introductory theory course.

At the southwestern research intensive school, for the years between 2001 and 2003, correlation tests revealed a moderate negative relationship between the number of absences and

Attendance by Test Average Scatterplot

All students at Midwestern research intensive university

(r = - .536, p < .01, n = 297)

Figure 3. Attendance by test average scatterplot for students at the Midwestern university.

test score averages, $\underline{r}$ = -.377, $\underline{p}$ < .01, $\underline{n}$ = 358 (see Figure 4). For all students tested at this

school, the average number of absences over the years was 3.54 ($\underline{SD}$ = 4.42). The test average

over the same period was 72.70 ($\underline{SD}$ = 11.10). One difference that should be accounted for

between institutions is the nature of the students in classes taught. At the previous two

universities, the courses taught were sophomore or below general education courses. Whereas

courses taught at the southwestern university only included sophomore or above major only

courses. Indeed, level of course did influence test score averages: $\underline{F}(2, 1614) = 96.04$, $\underline{p} < .01$, η^2

= .11. However, the type of course (performance/skill vs. theory) did not influence the results.

In order to test whether an enforced attendance policy influenced the results (see Levine 1992), I

altered the policy for Spring 2003 classes from the attendance policy enforced previously at the

southwestern university. Students were informed during Spring 2003 that attendance would be

taken but that it would not be used for calculating a final grade, thus removing the punishment
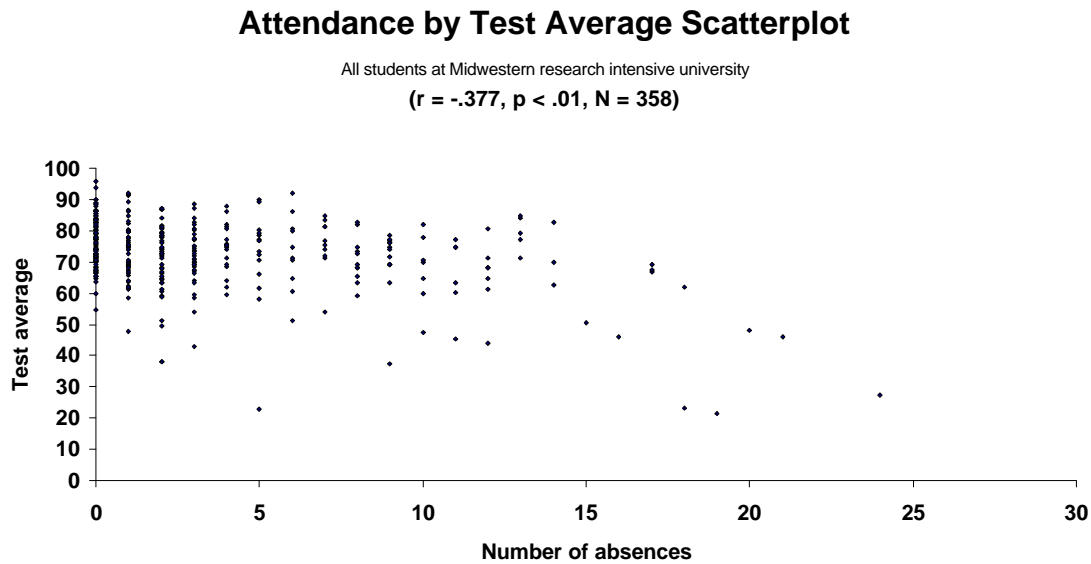
Attendance by Test Average Scatterplot

All students at Midwestern research intensive university

(r = -.377, p < .01, N = 358)

Figure 4. Attendance by test average scatterplot for students at the southwestern university.

motivation. Students were informed that the purpose of the policy change was to determine if a

relationship existed between attendance and grades.

Prior to Spring 2003 (at the southwestern university) and the change in policy, the

relationship between attendance and grades was significant but relatively weak, $\underline{r}$ = -.221, $\underline{p}$ < .01,

$\underline{n}$ = 226. The student absence mean for 2001-2002 was 1.16 ($\underline{SD}$ = 1.34). The test average for the

same cohort over the same period of time was 74.93 ($\underline{SD}$ = 7.87). However, during Spring 2003,

after the policy was changed, the outcome changed dramatically. The relationship between test

score average and absenteeism increased ($\underline{r}$ = -.470, $\underline{p}$ < .01, $\underline{n}$ = 118). Student absence increased

to a mean of 7.73 ($\underline{SD}$ = 4.70). In addition, the test average dropped to 72.24 ($\underline{SD}$ = 10.48). A

comparison of test averages across years pre and post policy change revealed a significant

difference between cohort averages, $\underline{t}$(342) = 2.67, $\underline{p}$ < .01, ω^2 = .02. A comparison of the

correlation between number of absences and test averages for the students attending class with an

enforced attendance policy and the correlation for students without enforced attendance revealed no significant difference between the two groups, $\underline{F}(1, 341) = .05$, $\underline{p} = .82$, $\eta^2 = .01$ (see Figure 5).
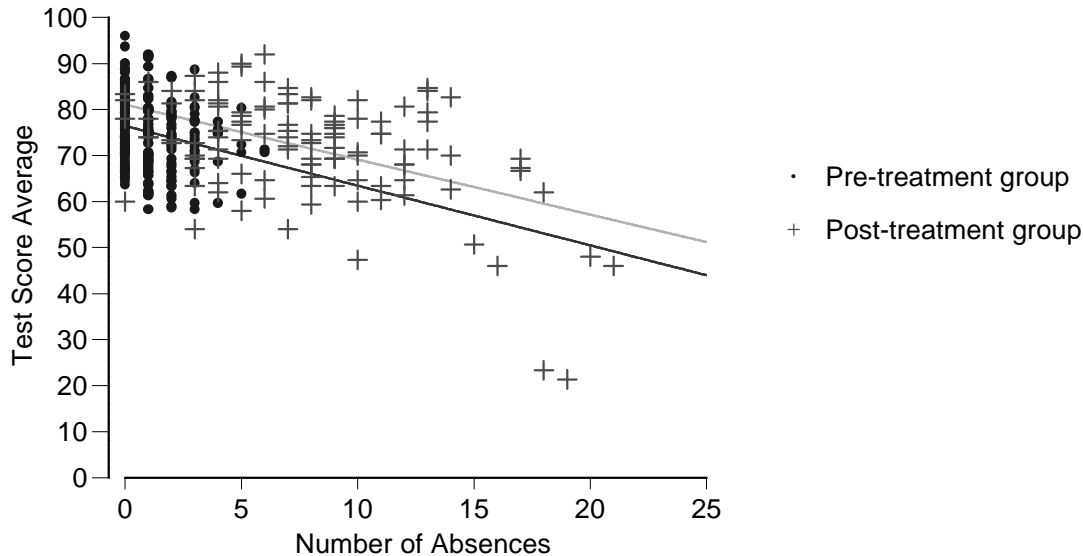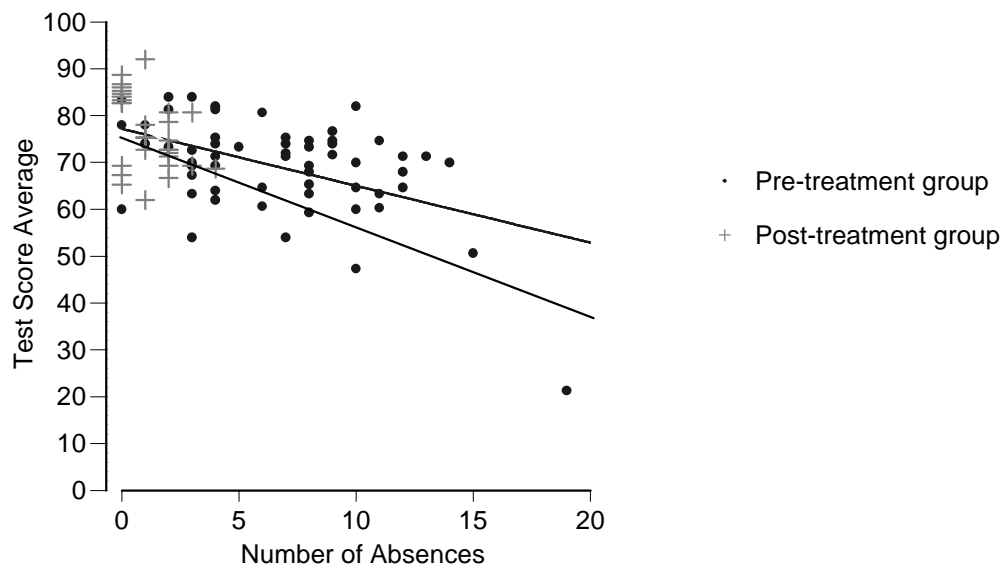

Figure 5. Homogeneity of regression slopes for all Southwestern university students.

These analyses compared students in various courses where test averages could differ as a function of the material, level of course, and type of course. Indeed, ANOVA revealed that subject matter did influence test averages $\underline{F}(3, 340) = 4.81$, $\underline{p} < .01$, $\eta^2 = .04$. Therefore, analysis was conducted on a particular course that was taught both pre and post-policy change. Results show that when controlling for course differences, an even stronger relationship exists between absences and test averages, $\underline{r} = -.581$, $\underline{p} < .01$, $\underline{n} = 91$. Within this course, the average number of class days missed by students was 4.78 ($\underline{SD} = 4.50$). For the same cohort, the test score average was 71.77 ($\underline{SD} = 9.75$).

A comparison of student cohorts pre and post-policy change also suggests a strong relationship between attendance and grades. For example, prior to Spring 2003 the correlation between number of absences and test scores was moderately negative, $\underline{r} = -.417$, $\underline{p} = .02$, $\underline{n} = 31$. During Spring 2003 for the same course, however, the strength of the relationship increased, $\underline{r} =$

-.530, $p < .01$, $\underline{n} = 60$. The mean for the number of absences in 2003 ($\underline{M} = 6.67$, $\underline{SD} = 4.43$) was significantly higher than in the prior period ($\underline{M} = 1.13$, $\underline{SD} = 1.12$), $\underline{t}(89) = 6.82$, $\underline{p} < .01$, $\omega^2 = .33$. As well, the test score means also differed significantly between 2003 ($\underline{M} = 69.29$, $\underline{SD} = 9.83$) and the prior period ($\underline{M} = 76.58$, $\underline{SD} = 7.70$), $\underline{t}(89) = 3.60$, $\underline{p} < .01$, $\omega^2 = .11$. A comparison of correlation coefficients for pre-and post policy change for the same course revealed no significant difference between student cohorts, $\underline{F}(1, 87) = 1.39$, $\underline{p} = .24$, $\eta^2 = .02$ (see Figure 6).

Figure 6. Homogeneity of regression slopes for all southwestern university students in the same course.

If enforced attendance served as a strong external motivator, what type of relationship might exist between attendance and grades if an external attendance demotivator was put in place? To answer this question, a comparison of student cohorts in six sections of the same course was conducted. The two sets of student cohorts differed by whether students had access to videotaped lectures via streaming video on WebCT. It was proposed that there is a significant difference between students in a course who did not have access to videotaped lectures and

students who did have videotaped lectures in terms of the strength of the correlation between attendance and grades. Pearson tests revealed a moderately weak but significant negative correlation between the number of absences and test scores for students without access to videotaped lectures (r = -.289, p < .01, n = 83). Interestingly, a slightly stronger relationship was found for students with videotaped lectures (r = -.306, p < .01, n = 80). However, a test to compare the difference in the strength of the relationship between students with and without videotaped lectures failed to find any significance. When examining the student cohort in aggregate for the course, a moderately weak but significant negative correlation was found between number of absences and test scores (r = -.269, p < .01, n = 163).

To further examine possible differences between students who have access to videotaped lectures and those that do not, two post-tests were run. Tests failed to find any significant difference between students who had access and those who did not on test score averages. However, tests revealed a small but significant difference between students who had access (M = .86, SD = .98) and those who did not (M = 1.39, SD = 1.59) on the number of absences, $t(161)$ = 2.517, p = .01, ω^2 = .03. These results demonstrate that students who had access to videotaped lectures were more likely to attend class.

Finally, I tested whether there was a relationship between attendance and final course grade. Results indicated a strong, negative correlation between number of absences and final course grade (r = -. 607, p < .01, N = 1647). For all students, the average number of absences was 2.71 (SD = 3.76). The average final grade was 85.82 (SD = 11.50). One might think that enforcing an attendance policy would negatively influence the final grade outcome, since the attendance policy resulted in a deduction of points from the final grade. This was not the case. The average final grade when attendance was enforced was 86.48 (SD = 10.90, n = 1523). Yet

the final grade average when attendance was not enforced was 77.66 ($\underline{SD}$ = 15.11, $\underline{n}$ = 124).

Comparison of the two groups revealed a significant difference between the two groups: $\underline{F}$(1,

1645) = 70.34, $\underline{p}$ < .01, η^2 = .041. If I looked only at courses at the southwestern school, which

represented only upper-division communication majors, test revealed that there was a significant

difference between students' final grade average when attendance was enforced ($\underline{M}$ = 73.84, $\underline{SD}$ =

9.92, $\underline{n}$ = 234) and students' final grade average when attendance was not enforced ($\underline{M}$ = 70.54,

$\underline{SD}$ = 12.95, $\underline{n}$ = 124), $\underline{F}$(1, 356) = 7.31, $\underline{p}$ < .01, η^2 = .020.

Discussion

These results strongly suggest that student attendance is related to grades. The

relationship between attendance and grades exists whether or not an attendance policy is

enforced. However, with the lack of an enforced attendance policy, both attendance rates and test

score averages drop, but relationship between attendance and test scores does not change

significantly. The results suggest that while students may be externally motivated to attend class

by an enforced attendance policy, having such a policy does not affect the relationship between

attendance and test grade averages.

These results also suggest that attendance matters even when course material is

distributed through means other than on-site lecture. Students who had videotaped lectures

available did not differ significantly in their test score averages from those who did not. Of

course, having the lectures available via distance technology such as online streaming video is

not a guarantee that these lectures will be watched. It is more likely that interactivity between

students and faculty, like which is possible in on-site instruction, is more powerful in terms of

academic outcome than other modes of instruction.

These findings have several implications for educators. While attendance itself may have beneficial effects for students in terms of academic outcome, an enforced attendance policy seems to have no overall beneficial effect. Students seem to be opposed to enforced attendance. Enforced attendance becomes more problematic at schools with larger non-traditional student populations. For example, at one school tested, a significant number of students are older, work full-time, and have families. Without external motivation, it might be easier for students to justify not attending class.

On the other hand, college students may resent paternalistic tactics such as an enforced attendance policy. By eliminating enforced attendance, greater weight is placed on the assessment of subject mastery (see Rubin, 1990). As the results indicated, test score averages for groups of students with a higher frequency of absenteeism had a wider distribution as well as a lower test score average. Eliminating enforced attendance may require students to take more personal responsibility for their education. Furthermore, explicitly stating to students that lack of attendance correlates with lower grades while not requiring attendance allows students to make informed decisions (Levine, 1992).

There are a few limitations to this study which may have impacted the results. First, all classes in the study were taught by the same instructor. The results may not be generalizable to other faculty due to differences in teaching styles or approaches. Yet a strength of this approach is that the test measured consistent application of attendance, grading criteria and scale to a particular teaching style. As mentioned above, the dependent variables were shown to be reliable. Another limitation may be the lack of randomness in the participant pool. The participants in this study included all students who completed a class taught by the author. Yet despite these limitations, this study provided ample evidence of a correlation between attendance and grades

compared to other studies due to size of the participant pool, number of sections, number of

schools, and number of different courses.

These limitations suggest that more thorough study of the relationship between

attendance and grade outcome might be warranted. In particular, future studies might investigate

whether courses taught remotely (online, or through distance education technology) differ

significantly from traditional on-site classes in terms of the relationship between attendance

(operationally defined to include both contexts) and grades. Yet to do such studies beg an

obvious question: why study something that seems painfully obvious to educators? As a

communication scholar, I am interested in how we frame our argument to students as to why they

should come to class. Certainly, we might hope that students would take our sage wisdom

regarding the importance of attending class based simply on our credibility as educators. In my

classes, where I admonish students to think critically, students often do so about the issues most

important to them, such as whether they should come to class. This type of study provides

evidence to enhance instructor credibility when giving advice that would seem to be

commonsense.

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