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THE EFFECTS OF AN INSTRUCTOR'S WRITTEN REACTIONS ON STUDENT LOGS UPON CERTAIN STUDENT PERCEPTIONS, ATTITUDES, VALUES, AND BEHAVIORS

by

Paul Johannes Berghoff

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Education and Psychology)
in The University of Michigan
1971

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You wouldn't believe how much pleasure it gives me to write these acknowledgments. I can still remember the day 11 years ago that I walked down the steps of Angell Hall knowing that I had flunked out of the University of Michigan. I never would have believed that some day I would receive a Ph.D. from the same university.

The completion of this dissertation marks the commencement of a new phase in my life in which I am personally assuming full responsibility for my continued growth as a professional, teacher-learner, and person. I look forward to this phase with a combination of fear and excited anticipation. I must now meet my own expectations for myself.

I extend my gratitude to the members of my doctoral committee who have been facilitating of my growth in so many ways. I am sorry that Don Barr was not able to remain on my committee. Although I often disagreed with Don, I also felt tremendous trust and respect for him. Most of all I want to thank my chairman, Al Menlo, for being the loving caring person that he is and for opening a whole new world for me.

Finally, I dedicate this dissertation to my students, past, present, and future and to my wife, Beth, without whose help this dissertation could not have been completed. I hope to mark with the completion of this dissertation a beginning:

A rededication of myself to continue to grow and change as a facilitator, husband and person.

Paul

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CHAPTER I

INTRODUCTION

Statement of the Problem

Few would question the value of teachers achieving a better understanding of the effects of their behavior on students. Many teachers spend great amounts of time reading and making comments on students' papers. I assume that teachers engage in commenting behavior based on their beliefs that the comments will have worthwhile effects on their students. It would seem that a behavior so widely practiced would have a substantial amount of research validating writing comments as a useful teacher behavior and exploring the apparent relative effectiveness of different styles of commenting. This is not the case. There are only a handful of published experimental studies (Page, 1968B; Sweet, 1966; Taylor and Hoedt, 1966; and Seidman, 1967) that deal directly with the problem. Many questions have not yet been explored. The explicit focus of this study is on the broad question of what effects do an instructor's written reactions to students' written papers have upon certain student perceptions of themselves as learners, their attitudes, their values and their behaviors. A perception is defined as a mental integration which has sensory experiences at its core; an attitude is defined as a more or

less stable disposition of opinion involving expectancy of a certain kind of experience, and a readiness to respond appropriately; a value is defined as a subjective appreciation of the worth of something; and a behavior is defined as the "total response which an organism makes to any situation with which it is faced." (Drever, 1964, p. 28) The perceptions, attitudes and values studied in this dissertation will be inferred from observations of behavior and operationally defined.

Reasons for Conducting this Study

It is important to know if the presence, and/or amount of teacher comments on students' written products other than examinations significantly affect such variables as the length of the written product, the amount of non-required reading done for the course, student attitudes toward aspects of the course their written products (relative perceived quality, enjoyment of writing, helpfulness, etc.) and toward the instructor. The result of this and similar studies should be helpful to teachers in deciding whether or not to respond to their students' products if they wish to change student attitudes toward these products and the course, increase the output, or increase outside non-required reading. There are, in addition, important questions about how the various types of responses a teacher might make such as approval versus disapproval, right versus wrong, or evaluative versus non-evaluative might affect the performance and attitudes of students.

This is the first study that explicitly attempts to

reduce or eliminate the effects of competition for grades from the effects of the comments. In the Page (1958B) and Sweet (1966) studies, in fact, one of the specific outcomes investigated was the effects that comments written on examinations had on achievement shown on future examinations. The attempt to reduce the effects of grades is accomplished by informing the students that the content and quality of their logs will have no effect on their course grades.

This was the first study in which the topics the subjects write about were left almost entirely up to them. It was suggested that they write some form of reaction log about their experiences whether in reading or observing or talking to others. The decision as to what to include or not include rested completely with them.

This was also the first study in which the effects of a neutral or non-evaluative teacher comment (as contrasted with praise or criticism) was explored in relation to the effects of positive teacher comments and no teacher comment.

Experimental Procedures

The design of this study is briefly summarized below in order to aid in the discussion and clarification of concepts as they apply here. Each subject was required to write a reaction log (paper whose content and length were determined by the subject--the only guidance was the instructor's suggestion that the logs pertain to the course for which they were written in some way) every two weeks. The subjects were informed that the content of their logs did not effect

their grade in the course. The logs were treated in the following manner. They were randomly divided into three treatment groups. In group 1 (EVAL) the logs received positive, content related comments, i.e. praise. In group 2 (NON) the logs received non-evaluative or neutral content related comments. In group 3 (NO) the logs received no written related comments. Changes in the length of the logs as well as changes in perceptions, attitudes, and values related to the logs and the course were examined. Chapter IV contains a more detailed description of the method of this study.

Possible Outcomes and Theoretical Constructs

One possible outcome of this study is that EVAL comments results in longer logs, more positive attitudes, etc. It is then theorized that the praise acts as a reinforcer since when a response is followed by a reinforcer the frequency or probability of its recurrence increases. A reinforcer refers to any event that satisfies or reduces an existing motive. (Berelson and Steiner, 1964, p. 141) EVAL comments might act as a reinforcer for a subject if they satisfy a need (need for approval) or if they have been associated with a satisfying state of affairs in the past (good grades or praise from parents).

The NON comment condition is conceived of as a non-evaluative, non-judgemental treatment condition communicating 'unconditional positive regard' (Rogers, 1967, pp. 102-103) for the students and their written products. The assumption

that a response can ever be completely non-evaluative is probably incorrect since in a study by Truax (1966) there were indications that a therapist may almost never be completely non-evaluative. He usually picks certain ideas to respond to and this behavior on the part of the therapist may very well be a reinforcer for certain client behavior. In the same way NON comments on students' logs may well act as reinforcers for length, attitudes, perceptions or values. It should be of interest to note, if NON comments act as reinforcers, whether they have a more pronounced, equal, or less pronounced effect than EVAL comments. If the effects of EVAL and NON comments are approximately equal and greater than the effect of NO comment then it might be possible to surmise that the reinforcing effect is due to the subjects being responded to in a non-negative non-criticizing manner rather than being due to the reinforcing effect of one comment style or the other. The fact that the teacher reads and reacts to the logs at all rather than the particular style of reaction would be reinforcing. Or another possibility is that NON comments may be interpreted negatively by students. If they perceive the instructor as a caring person who usually gives positive responses, NON comments might be seen as either a lack of praise and caring or that 'he couldn't think of anything good to say, he just wrote something neutral.'

It is also possible that NO comment condition is reinforcing. This could occur in one of two ways. Either the act of writing the log itself could be self reinforcing (the

act of expressing oneself may be pleasurable) or since "Operant behavior is strengthened by the presentation of reinforcing stimuli (sometimes called 'positive control') and also by the removal of aversive stimuli (sometimes called 'negative control'). The removal of an aversive stimulus contigent upon a response is called negative reinforcement, and the behavior is called escape." (Reese, 1966, p. 20) Assuming that teachers' comments in the past constituted aversive stimuli to most of the subjects then the removal of those stimuli (comments) would constitute a negative reinforcement, but only if the removal of the aversive stimuli were experienced as contingent on their responses by the subjects. It appears that the implicit theory that most teachers operate under is that negative reinforcement will result from the escape from the aversive stimuli of teachers' comments by students when they 'improve their writing.' This point is developed in the next chapter. The point here is that for negative reinforcement to occur in this treatment the subject must experience the lack of comments as due to his writing better papers. If the subject experienced not receiving comments as due to his having written better papers then this treatment would act as a reinforcer. If the student did not experience the no comment condition as due to his behavior this treatment would not act as a reinforcer. Also, if the student experienced receiving comments as a reinforcer then the withdrawal of comments would act as an aversive stimulus. There is evidence that at least in some cases teachers commenting on or even

reading student papers may be viewed negatively by the students. In a study by Fader and McNeil (1968) the subjects (delinquent boys) were explicitly told that their papers would not be read as an attempted inducement for them to write and write what they wanted to. In fact, attitudes toward different aspects of schooling improved significantly though the treatment consisted of many variables in addition to written work which was not read, making it difficult to attribute probable causality to any specific treatment.

This leads up to an in depth discussion of other studies dealing with the issues related to the effects of teacher comments in the following chapter.

CHAPTER II

DISCUSSION OF RESEARCH

Research on the Effects of Grading

Possibly the most common type of teacher written reaction to student written products is grading. Grading should be distinguished from the more elaborate teacher responses of making comments which are to be examined shortly. Grades differ from comments in that they usually consist only of a ranking of the student's written product by means of a letter grade or a numerical rating value.

The first thing that strikes this researcher about grading student written products is the notorious unreliability of the grading. In a study reviewed in a paper by Follman and Anderson (1967), "Diederich and others examined the ratings of 300 short essays, 150 on each of two topics, made by 53 readers from six different professional areas. The raters were instructed to sort the papers into nine grading categories. More than one-third of the 300 papers received all nine grades; 94% of the papers received seven or more of the nine possible grades; and no paper received less than five different grades. The median correlation between readers was .31."

In his paper, "The Problem of Grading Essays," Paul

Diederich (1957) never found a correlation of higher than .70 between any two methods of judging students writing ability whether they be objective tests, subjective judgements or a combination of both. In fact, "In this field whenever we get a correlation of about .70 between good teachers' judgements, based on a long series of papers, and or scores on any sort of test, objective or essay, we usually slap one another on the back and offer congratulations, for that is just about the extent to which good readers agree in their judgements of the same set of papers." Diederich's statements are not as meaningful as they appear to be since with a small n a correlation coefficient as large as .90 may not be significant. Also, it would be helpful to know, assuming that .70 in this case is a significant correlation, what the standard error is.

This indication of unreliability was by no means unique and many plans including the one suggested in the Follman and Anderson (1967) paper were suggested to improve this situation. A paper by Marshall (1967) was suggestive of a reason for the notorious unreliability. He found an inverse trend between the number of composition errors (i.e. grammar and spelling) and the grade assigned to an essay examination holding actual content of the examination constant.

What should be of prime importance here is the effects of grades on students. But Richard Braddock et al. (1963) in Research in Written Composition stated that "It is somewhat surprising that little research has been done in

that aspect of a composition teacher's work in which he spends so much of his time--the marking and grading of papers for instructional purposes." In fact, to the great amazement of this author, only one study of the effects of grades on compositions was discovered. Bostrum, Vlandis, and Rosenbaum (1961) attempted to relate grades to attitude change. In their experiment students were instructed to write essays supporting a position opposite to one they actually held. Grades were assigned randomly to the essays: 1/3 received a grade of A; 1/3 D; and 1/3 received no grade. Subjects who received an A changed their scores on an attitude measure administered pre and post essay 31.76 points in the direction of their essays. Students who received a grade of D and no grade also significantly changed their attitudes (25.85 and 27.11 respectively) although those who received an A changed significantly more. It seems that writing the essay caused the major attitude change while grades had a minor, though measurable, effect.

Research on the Effects of Comments

The next area explored is the effect of teachers' written comments on students' written products. First, why do teachers make comments? Dusel (1955) feels that "if pressed for a justification of the procedure, most teachers would probably say that they mark papers in order to teach pupils how to write better. Yet a critical examination of their marking practices would raise some puzzling questions of motive."

> Are those teachers who are so careful to point out every conceivable weakness in a pupil's composition really marking to teach? Or are they intent on establishing their superiority, their self-importance, or their professional competence (as proof-readers)... If marking is a form of instruction, it should communicate the kinds of information which the learner needs in order to improve. (p. 391)

Many other writers were also critical of the way teachers make written comments on student papers (Zoellner, 1969; Kitzhaber, 1967). One study in this area indicated that students prefer receiving checks to a system of symbols or abbreviations on their papers (Halvorson, 1940).

Research on the Effects of Praise and Blame

There has been a great deal of research on the effects of praise and blame going back to the early part of this century. Many of the results are apparently contradictory making it difficult to draw conclusions from this research.

Marshall (1965) found that "A review of the research on the effect of punishment on children reveals that, in general, negative reinforcement tends to improve performance." (p. 32) He defines punishment as

> ...the subject performs a particular ace (R) for which he is subsequently 'punished' with a negative reinforcer (S). That is a particular response is followed by the aversive stimulus (R-S)... Those punishment situations that have been utilized in research with children include such negative reinforcers as blame, reproof, failure situations, and the word 'wrong.' (p. 23)

A single study by Kennedy and Willcutt (1965) comes to just the opposite conclusion.

> In general, the results of the present study point to a consistent superiority of the verbal incentive, praise, over reproof in simple discrimination learning. There seems little doubt that the major difference between the two incentives in this study results from the increasing detrimental effect of blame as one moves up the grade levels. (pp. 516-517)

In a study by Rosenhan (1966) it was found that, relative to middle-class children, approval facilitated the performance of lower-class children while disapproval retarded it. (p. 253)

Combining the information of two studies seems to untangle many of the apparent contradictions about the effects of praise and reproof. In the first, a very old study (1924), by Hurlock in which subjects were selected at random from the 3rd, 5th and 8th grades of two New York schools. The Otis Intelligence Tests were used to determine the effects of praise and reproof. The procedure was first to have the selected subjects take the Otis Form 1 in a large room. After exactly one week the subjects were divided into thirds, matching groups on the basis of the scores on the first test and were administered Otis Form 2 in separate groups. The control group just retook the test. The "Praised" group was told that they had done very well and should try to do even better this time. The "Reproved" group was told that they had done very poorly and should try to raise their scores.

The conclusions drawn from this study were:

1. That older children respond more to both praise and reproof than do younger ones. Praise is slightly more effective for older children and reproof for younger.

2. That some incentive is more essential for "superior" children than for "inferior" children if their work is to be kept up to the maximum of their ability. Both praise and reproof seemed to serve this purpose. The "superior" children were greatly influenced by both incentives while the "inferior" were decidedly less so. Of the two, praise was somewhat better for the "inferior" and reproof for the "superior" children

3. That reproof had its greatest effect on children rated by their teachers as "superior" in school work, while praise was of greater value for the "average" and "inferior" children.

4. That a study of the questionnaires answered by the children at the end of the experiment throws some light on the children's reactions to the incentives. According to their answers, it seems that they tried harder after being praised than after being reproved. In addition to these, they said that encouragement had a more lasting effect than had discouragement.

In a much more recent study (1963) by Crandall, she stated that:

> It is commonly thought by parents and teachers that successful training of children can be achieved by praising correct performances and ignoring mistakes on the assumption that the "ignoring" (or nonreaction) is neutral in its reinforcement effect. It is quite possible, however, that an adult's ignoring a child's error is perceived by the child differently depending upon his previous history of reinforcement with that adult. Thus, the child who has been reared by "usually praising" parents may interpret their occasional silences as evidence of disapproval and behave as though he has been negatively reinforced. Conversely, the child who has been subjected to a "usually criticizing" adult may perceive silence as unverbalized approval and behave as though having been positively reinforced. (pp. 335-336)

And concluded that:

> Ss changed their expectancy estimates after adult nonreaction in directions opposite the adult verbal reactions which had preceded them ($p = .001$). Nonreaction (or silence) thus appeared to have <u>active</u> reinforcing properties contingent upon the child's previous reinforcement experience with the examiner. (p. 353)

Apparently, if one has usually been praised, he may interpret no response (no comment) as criticism and if one has usually been criticized he may interpret no response as approval. Also, if one has usually been criticized in the past, praise is likely to be more effective and if one has usually been praised, criticism is likely to be more effective. In short, it is the unusual response that is likely to be most effective in influencing behavior. There is also some evidence (Hurlock point 4 above) that praise increases enjoyment (more positive attitude) more than reproof or criticism. More evidence will be presented on this below.

Two educators who are engaged in teaching English have some suggestions that can be related to this data. Diederich (1967) in an article entitled "In Praise of Praise" argues that teachers make far too many negative comments for students to be able to change so many things. He suggests that teachers:

> Find in each paper at least one thing, and preferably two or three things that the student has done well, or better than before. Then, if you must, find one thing, and preferably not more than one thing, that he should try to improve in his next paper. (p. 59)

What he is really saying, I believe, is that teachers should vary their responses and not always give negative ones to take advantage of the effects described above.

Zoellner (1969, pp. 280-281) in an argument based on operant learning principles suggests that we should reinforce approximations to the goal rather than just tell the student in paper after paper that he has "missed the bullseye." Again

vary your response or do things differently from other teachers.

Research on the Effects of Written Comments

A study by Taylor and Hoedt (1966) dealt with material that was more closely related to the issues being investigated in this dissertation.

> The effects of praise and blame upon quality and quantity of themes produced as well as upon children's attitudes toward creative writing were investigated. The 105 elementary pupils who served unknowingly as Ss were divided into groups and given (a) praise without correction or (b) criticism with correction for all theme writing efforts.
>
> Results support the assumption that praise without correction in the classroom is superior to blame. While both groups improved equally, the praised but uncorrected group produced significantly more work, exhibited more favorable attitudes, were more highly motivated, and appeared to be more independent than those subjected to blame and correction.

Quantity of writing was measured by counting the number of words in each theme. Attitudes were assessed by analyzing attitude scales filled out by the students, asking the students if they wanted to write more papers, counting the number of excessively wrinkled or torn papers for each treatment group, and anecdotal information. Motivation was inferred from the expressed desire to write more themes from the counting of students in each treatment who wrote more than one theme per assignment. Independence was assessed by counting the number of times people in each group actively sought praise from the instructor.

It can be surmised from the results that these

students received more blame than praise in the past. The present study also investigated some aspects of the effects of praise on quantity of output and on attitudes.

The Taylor and Hoedt (1966) study lead into a series of studies and replications which answered many questions about the effects of written comments on examinations (objective tests) on achievement, attitudes, and motivation.

The study on which all the others described below were based was by Ellis Page, "Teacher Comments and Student Performance: A Seventy-Four Classroom Experiment in School Motivation" (1958B). In his study Page used 74 randomly selected secondary high school teachers and all their 2,139 students. The study incorporated the regular objective tests which the teachers usually used. After scoring and grading the test papers in their usual way, and matching the students on performance, the papers in each class were randomly assigned to one of three treatment groups. The No Comment group received only a grade. The Specified Comment group received uniform comments, decided on beforehand and determined by grade. For instance an "A" paper received the comment "Excellent! Keep it Up." "F" received "Let's raise this grade!" etc. All the comments were felt to be encouraging to the students. The Free Comment group received whatever comments the teacher felt were appropriate for that particular student and test. The tests were then returned to the students. The scores on the next objective test were the criterion of comment effect. Page found that students who had received

either a free or a specified comment on the first test did significantly better on the second test than did those students who received nothing but a numerical score and letter grade on the first test. These results held across different schools, ages, and grade-point averages of the students involved. The opinion of many of the teachers that the better students would be more responsive to the comments was not verified due to a strong positive response by F, but not by D students (Page 1958A, p. 108). Also, there was no relationship between Free Comment length and Free Comment effectiveness (Page 1958A, p. 112). This study demonstrated that both grades and comments could be more effective in improving scholastic performance than just grades.

Reginold Jones did the study "Teacher Comment and Student Performance: Five Partial Replications of Page's Study" which adds a great deal of information. It was a partial replication because Jones did not include a Free Comment group and because it was done at the college level. It also included measures of student ability and need for academic recognition. In this study subjects were assigned randomly to two treatment groups ("specified comment" and "no comment") after being matched on past achievement in the same class. Attempts were made to keep the instructor unaware of the identity of subjects receiving comments (the names were covered when the instructor wrote the comments). Test papers were returned to the students but were picked up at the end of the hour. Specified comments were very similar to those

used by Page. (pp. 3-4)

Study I:

> For freshman-sophomore level students there was a significant comment x ability x recognition need interaction. Students of low ability having high need for academic recognition tended, on criterion measures, to perform at a substantially higher level than non-reinforced subjects of the same status, or those having higher ability but low needs for recognition status in academic situations. These letter subjects, in fact, tended to decrease in their criterion performance following reinforcement. (p. 20)

This result suggested that teacher comments may be detrimental to the performance of subjects having high ability but low need for recognition status.

Study II: The same as Study I except juniors and seniors were used as subjects instead of freshmen. The results did not hold.

Study III: The juniors and seniors were again used.

> Certain schedules of reinforcement (0, 1, 2, 2 alternate, or 3 three (sic.) administered to the same students) brought about both short-term and long-term and long-term (sic.) effects. There were some positive effects noted 1-2 days after reinforcement. One month following termination of treatments, a significant ability x reinforcement (interaction sic.) was revealed. Students of low ability receiving two reinforcements achieved significantly higher than most other groups, supportive of Page's partially supported observation that comments 'wear out.' (pp. 20-21)

Studies IV and V: The criterion performance of graduate students was unaffected by the teacher's comments.

Sweet (1966) also did a partial replication of Page's study.

> The study deals with a partially established relationship between a teacher's written comments on a test and subsequent student attainment as measured by test performance. In addition, an attempt was made to ascertain one's attitude change towards a particular school subject (9th grade English) as a function of the teacher's comment. Three classes of each of three teachers comprised the sample of 225 students taking ninth grade English. Over a period of six weeks, each teacher gave four tests which were not of the long essay type. When each test had been corrected, the teacher returned the test papers with the numerical score and letter grade as earned. No Comment (N) students received only the numerical score and letter grade. Free Comment (F) students received whatever comment the teacher felt it desirable to make. The Specified Comment (S) students received comments designated in advance for each letter grade. Attitude inventory scores, based on Osgood's semantic differential (evaluative dimension), were collected on the day before the administration of the first test and soon after the return of the fourth test. Because of the qualitative and quantitative differences between all the different tests used by different teachers, the tests were regarded as ranking instruments.
>
> The Friedman Two-Way ANOVA was used to analyze the ranked data across individual subjects and across classes. Comments of either a free or specified nature have little if any short-term effect on test performance; over a longer period of time, the inclusion of free comments has a significant effect on scholastic performance. Attitudes were analyzed by using the Wilcoxon Matched-Pairs Signed-Ranks test. A highly negative Z signified that only under the free comment condition were attitudes significantly changed in a positive direction. This indicated that the inclusion of specified comments was no more effective in changing attitudes than were no comments.

One major study, also a partial replication of Page's study dealt with the effects of comments on compositions. "Marking Students' Compositions: Implications of Achievement Motivation Theory" by Earl Seidman (1967). Seidman's concern with achievement motivation was closely related to my concerns about attitudes. "If we assume, as I do, that

motivation for achievement plays as key a role in learning to write effectively as it does in other learning activities, we can see that a teacher's attention to the potential emotional effect of comments upon the student may lead in the long run to a negative effect on the student's learning."

"The effectiveness of a teacher's comments rests at least in part not only on their cognitive validity, but also on the effect those comments have on the student's motivation to improve his writing." (p. 7)

Seidman had five teachers teach a series of eight composition assignments in two of their classes. They all taught them at the same place and the same time. Students were assigned to one of three treatment groups. A received selective, supportive and informative comments. B received judgemental, all-inclusive, negative type of comments (the kind that most teachers use). C received no comments.

The criterion measures were the number of optional rough drafts and revisions of the compositions which the students wrote. Group A wrote significantly (.025) more optional rough drafts and revisions than B and C.

> The results of the study indicate that teachers' written comments on their students' compositions do affect the students' motivation to improve their writing. Moreover, the results indicate that the all-inclusive, negative, and judgemental approach to commenting on students' compositions, an approach which seems to prevail among teachers of English, tends to stifle students' motivation to learn to write better, whereas; a selective, supportive, and informative style of commenting on students' compositions tends to strengthen their motivation to learn to write effectively. (Seidman, 1967, Abstract)

Seidman (pp. 82-90) also presented some evidence that many students preferred (had more positive attitudes toward) selective, supportive, and informative comments than the other two treatments. Some also seemed really hurt by the all-inclusive, judgemental, negative comments.

Seidman found some evidence though it failed to reach significance that the effects of teacher's comments on students' motivation may be cumulative over treatments and time. (p. 49) He also checked for improvement in writing ability using the Sequential Test of Educational Progress in Writing, Form 2B and found non-significant though directional support for praise (his condition A) improving writing skill.

Seidman's study was very similar to that of Taylor and Hoedt cited earlier. They both came to very similar conclusions, i.e., that students do more work and feel better about it when they are praised than when they are criticized. This may well be due to their being criticized more than praised in the past. There was evidence presented above that criticism is the usual mode of composition feedback used by English teachers.

CHAPTER III

HYPOTHESES

The central question to which my research speaks: What effects do the instructor's written reactions to students logs have upon certain student perceptions of themselves as learners, their attitudes, their values and their behaviors which are relevant to the teaching-learning process?

The certain perceptions, attitudes, values and behaviors I selected were ones which I felt were important for college instruction; i.e., the more college instructors understand the effects of their reaction to written material on student perceptions, attitudes, values, and behaviors, the better they can become at facilitating the teaching-learning process. Following is a list of each of the perceptions, attitudes, values, and, behaviors investigated in this study; the hypotheses to be tested; statements of the rationale for their inclusion; and supporting research.

I. Hypotheses investigating students' perceptions of themselves as learners.

IA. The students' perceptions of the level of their own learning.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' perceptions of the amount they learn in the course.

Rationale: College instructors want to know what effects their written reactions have on student perceptions of their own learnings. What reactions would result in students perceiving themselves as successful learners?

Research: In a study described by Watson (1969, pp. 254-255) on the effectiveness of programmed approaches to interpersonal changes, subjects reported that sessions in which they received full and frequent feedback (comments from other participants) as being most rewarding.

IB. The students' perceptions of the instructor's attitude toward the students.

Hypothesis: it is hypothesized that the type of instructor response students receive on their logs effects the students' perceptions of the extent the instructor cares about them and their learning.

Rationale: College Instructors want to know what effects different types of written comments or the lack of comments have on students' perceptions of the instructor's caring about them and their learning.

Research: In a study by Lewitt and Mulle (1951) of the response (termed feedback in the study) of the receiver of information to the sender of information in a situation where communication between the two parties was necessary in order to successfully complete a task it was found that "...the presence or absence of feedback affects the sender-receiver

relationship. Zero feedback is accompanied by low confidence and hostility;" (the instructor doesn't care about my learning) "free feedback is accompanied by high confidence and amity." (p. 423)

IC. The students' perception of the quality of their logs.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' perceptions of the quality of their own logs relative to the quality of their classmates logs.

Rationale: It is helpful for college instructors to know what effects different kinds of written reactions have on students' perceptions of the relative quality of their work, i.e., what responses by instructors result in students seeing their products as having value. It is assumed that instructors want their students to perceive their productions as being of value.

Research: In the Taylor and Hoedt study cited above (1966) some of the students who received group B comments (lacking priase) wrote notes to the teacher on their papers indicating that they did not view their productions as being of worth. Two examples are:

> I don't know why but I just can't get anything out of this rock head of mine today. I don't see how I get good grades in everything else.
>
> Not done . . . I'm trying, but don't write anything bad until I have a chance to ruin this one too.

The children who received praise were more likely to share positive feeling about the experiment. (p. 83)

ID. The students' perceptions of the relevance of their logs to other aspects of the course.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' perceptions of the relevance of logs to other aspects of the course.

Rationale: It is helpful to know if the type of instructor response affects the perceived relatedness of material. It is believed by the experimenter that when one aspect of a course is perceived as related to other aspects of the course it is likely to enhance the meaningfulness of the perceived as related aspects.

Research: A generalized finding on the learning of new material in various situations as summarized by Berelson and Steiner (1964) is that "Meaningful material is easier to memorize than nonmeaningful material, and once learned, it is retained longer." (p. 166)

IE. The students' perceptions of the instructor's evaluation of the students' logs.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' perceptions of the instructor's evaluation of their logs.

Rationale: It is helpful to know what types of instructor responses are perceived as approval and what types are perceived as disapproval. Perceived approval and disapproval would be likely to act as reinforcers and it is believed by this writer that instructors should know which of their behaviors act as reinforcers.

Research: The literature review indicates that praise and blame may have different effects on different students (Hurlock, 1924; Crandall, 1963) depending on their backgrounds. It would be important to know especially with the non-evaluative category in the current study what the students perceived as approval and disapproval. Seidman (1967) cited above found that students who received selective, supportive, and informative comments were motivated to do more work than those who received negative comments or no comments.

IF. The students' perceptions of teaching as a career.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' perceptions of teaching as a career.

Rationale: A college instructor might want to know if his written reactions influenced the way students perceived teaching as a career. If the instructor were working with future teachers and believed or had data to support a belief that those students who perceived teaching as rewarding, hard

work, or as something they would like to do were more likely to be successful teachers, it would be important to know if certain written reactions tended to influence these student perceptions.

Research: No research was found to support this hypothesis.

IG. The students' perceptions of the extent of congruity between themselves and the instructor.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' perceptions of the extent to which he and the instructor have similar attitudes on educational issues.

Rationale: An instructor's written reactions might reinforce a student for agreeing and sharing opinions, attitudes or beliefs. Since induced conformity should not be, I believe, an instructor's goal it would be helpful to know if different instructors reactions produced greater or less perceived conformity.

Research: A conclusion drawn by Berelson and Steiner (1964) after reviewing research in the area of influences on opinions, attitudes, and beliefs is that "Opinions, attitudes, and beliefs within a group are particularly subject to influence by the most respected and prestigious member(s) of the group, the opinion leader(s)." (p. 569) This especially points out the vulnerability of student to teacher influence.

II. Hypotheses investigating students attitudes relating to the logs and learning.

IIA. The students' attitudes toward writing their own logs.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' attitudes toward writing the logs.

Rationale: Instructors find it helpful to learn the extent to which written reactions influence the attitude of the student as to whether or not doing a particular task is enjoyable.

Research: It was assumed that people would want to do more of the things they perceived positively. The teacher hoped the student would do more writing--if the student saw writing as something he liked to do. Mager in Developing Attitude Toward Learning (1968) suggested that when we say that a person has a favorable attitude toward a particular activity we are making a prediction that he will regularly engage in that behavior without coersion.(pp. 14-15) Also, Taylor and Hoedt (1966) and Seidman (1967) both cited above found that the type of instructor response effected the students' attitudes, toward their writing.

IIB. The students' attitudes toward logs as a method of learning.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' attitudes toward logs as a method of learning.

Rationale: Instructors find if helpful to know if their written reactions influenced the attitudes of their students as to the extent to which the written work the students performed was central to and facilitative of course learning. If in one reaction condition students felt that the logs were unhelpful and irrelevant and in another that the logs were very important to the course, the instructor would certainly want to react more with the later condition. If teacher comments influenced attitudes toward the logs they might also effect attitudes toward the course and, thus, indirectly performance in the class.

Research: One question raised by this dimension was, "Were students good judges of what helped them to learn?" I believed that they were. This is a fundamental belief of the supporters of the relevancy movement sweeping education today. In a study reported by Gagne, (1965) "Groups of engineers were trained in a number of different tasks pertaining to their jobs. In the initial group, the instructor controlled the sequence of content presented. In a second group, the students were permitted to select the content in accordance with an importance and sequence they themselves assigned. In still a third group, the students were initially given a detailed statement of training objectives, illustrated by the kinds of questions they were to be expected to answer; in addition, they were permitted to instruct themselves in any order or by any means they wished, reporting to the instructor when they believed they were ready to demonstrate

achievement of objectives selected by themselves. The results of this study showed that time required for training could be reduced markedly (as much as 65 percent in the third group without loss of proficiency." (p. 30) This study provides support for the belief that students may be more efficient in learning material when they are first presented with objectives if they control the sequence of presentation. Also, if a student's attitude is positive it may facilitate his learning. The studies by Seidman (1967) and Taylor and Hoedt (1966) cited above indicated that teacher comments significantly effected attitudes. But, there was only one study where there were any indications that attitude effected learning. Brodie (1964) found that when he compared 11th graders who were "satisfied" and "dissatisfied" with school, "satisfied" students out-performed "dissatisfied" students at a statistically significant level. (p. 375) Diederich and Jackson (1969) in their own study and in reviewing other studies found no other cases of attitude toward school (usually described as satisfaction versus dissatisfaction with school) having a significant relationship with achievement. This does not prove that attitude toward school and learning are unrelated, only that if there is a relationship it has yet to be consistently detected.

IIC. The students' attitudes toward the instructor's response to their logs.

Hypothesis: It is hypothesized that the type of instructor

response students receive on their logs effects the students' attitudes toward the instructor's response to their logs.

Rationale: It is important for instructors to know what the students' attitudes were toward the different types of written reactions in deciding how to react to students' written productions in the future. If the students' attitude toward a particular type of reaction were that it was usually unhelpful, the instructor might question whether he wanted to use that response category in the future.

Research: This is the same issue of whether students are good judges of what is helpful to them as was discussed in IIB. Also, as in IE, this might give some insight into whether students thought they were being praised or criticized.

IID. The students' attitudes toward having their logs returned by the instructor.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' attitudes toward having the logs returned by the instructor.

Rationale: It is helpful for instructors to know if their written comments effected the attitude of the student toward having papers returned by the instructor.

Research: Seidman (1967) and Taylor and Hoedt (1966) as cited above found that students in one teacher comment condition (praise) tended to do more work than those in other comment

conditions. It is possible that the students would be more likely to look forward to having their papers returned by the teacher when they were in the praise condition, also.

IIE. The students' attitudes toward engaging in new experiences (risk taking).

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' attitudes toward engaging in new experiences (risk taking).

Rationale: Instructors find it helpful to know whether some styles of instructor written reactions facilitated students being more open to new experiences in the classroom and more willing to take the risks involved in trying out new student behaviors such as for students who usually participate, remaining silent; and for those who usually remain silent, participating.

Research: In the Taylor and Hoedt study (1966) reviewed above a praised but uncorrected group of students were more independent (sought out less praise) than a criticized and corrected group. This finding would indicate that students who are praised and uncorrected may be more willing to try out new things (take greater risks without checking each step out with the teacher). Also, in studies of risk taking on objective examinations (RTOOE) which is defined as "guessing when the examinee is aware that there is a penalty for incorrect responses". It was found that "When Ss who are low in RTOOE are forced to respond to all test items there average test score will increase even though the usual penalty

for guessing is applied." (Slakter, 1969, p. 115) In another study by Lieblich (1968) it was concluded that stress decreased the amount of risk taken on a test. (p. 614) Thus, if stress were reduced for students by one of the comment conditions on the logs then risk taking behavior might increase on future papers and by generalization on examinations. If the risk taking behavior increased on examinations the students might very well increase their achievement.

IIF. The students' attitudes toward the course.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' attitudes toward the course.

Rationale: Instructors find it helpful to know if particular written reactions on student papers resulted in more or less favorable attitudes toward their course. Favorable student attitude is often a goal of a course.

Research: A study by Brodie (1964) cited above reached a conclusion that a negative attitude toward school had an inhibitory effect on the learnings which were emphasized in the classroom. Thus, if a certain comment style led to a higher probability of a negative attitude toward the course it could reduce learning in that course. In a study by Flanders, Morrison and Brode (1968) it was found that there were greater losses in positive attitudes ". . . among pupils whose teachers exhibited a lower incidence of praise and encouragement

than among those whose teachers exhibited a higher incidence of such behaviors" (p. 334). Also, in the studies by Taylor and Hoedt (1966) and Seidman (1967) reviewed above students in on comment condition (praise) had more favorable attitudes than those in other conditions. In Sweet's study (1966) cited above students who received 'Free Comment' changed their attitudes in a positive direction.

IIG. The students' attitudes toward being part of an experiment.

Hypothesis: It is hypothesized that the type of instructor response students receive on their logs effects the students' attitudes toward being part of an experiment.

Rationale: It is helpful for instructors to know if different written responses caused increased or decreased resentment at being an experimental subject. Resentment could lead to lack of cooperation and also could be an indicator of personal hurt of the student. It would be desirable to avoid both of these conditions if possible

This is a personal ethical issue for this experimenter. If people were unhappy about the way they were "used" or "treated" in an experiment, that I would not feel comfortable performing that type of experiment. Also, these items might correspond to satisfaction with the logs and the instructor reactions. If they liked the logs and comments they would be more likely to be pleased to be a part of the experiment and vice versa.

Research: Taylor and Hoedt (1966) found that students who received praise were more likely to write comments to their teachers indicating positive feeling toward the experiment. (p. 83)

III. The students' values regarding student-teacher closeness versus distance.

Hypothesis: It is hypothesized that the type of instructor response that students receive on their logs effects the students' values toward student-teacher closeness versus distance.

Rationale: If the instructor has a set of beliefs about the type of teacher-student relationship that it is desirable for students to value, and if his written reactions influence the type of relationship the students valued, he would want to use that style of reaction that influenced students to value the type of relationship he thought was desirable.

Research: In examining student-centered teaching (teaching in which the goals are student-student discussion, high instructor acceptance of irrelevant student contributions and some determination of goals by students) versus instructor centered teaching (teaching in which discussion if there is any is teacher-student, low instructor acceptance of irrelevant student contribution, and determination of goals by the instructor) it was found in a study reviewed by McKeachie (1963) that the students in the student-centered class were

significantly more favorable in their attitude toward that class and that there were ". . . gains in group cohesiveness, participation, and other indices of effectiveness in groups in which the leader specifically tried to establish acceptance and other characteristics of the student-centered group." (p. 1137) Since group cohesiveness (closeness) is greater in student-centered groups it is assumed that student-teacher closeness would also be greater and that more favorable attitudes toward the subject and more participation would be likely to result in those groups.

IV. The students' reading of the instructor's reactions.

Hypothesis: It is hypothesized that the type of instructor response that students receive on their logs affects whether or not students read the instructor response.

Rationale: It is important to know if the type of instructor written reaction influences whether or not the reaction is read. If the comments are not read, they can't have any effects on behavior other than the avoidance of reading them.

Research: Comments experienced as negative (painful) could produce an avoidance reaction. Behavior that reduces pain is physiologically adaptive (Berelson and Steiner, 1964) p. 243). If reading the comments in the past produced pain then reading them in the future may be avoided. The avoidance could also be a generalization from previous experience (past teachers' behaviors) confounding this variable.

V. Observed changes in the length of the logs.

Hypothesis: It is hypothesized that the type of instructor response that the students receive on their logs effects the length of the logs the students write in the future.

Rationale: Instructors find it helpful to know the effects of their written reactions on the quantity of written output produced by students.

Research: Both Taylor and Hoedt (1966) and Seidman (1967) cited above found that comment style effected the amount of output from the students they studied with praise resulting in the greatest amount of output.

VI. The students' efforts to change the content of their logs.

Hypothesis: It is hypothesized that the type of instructor response that the students receive on their logs effect students' efforts to change the content of their logs.

Rationale: Instructors find it helpful to know what types of written reactions cause students to attempt to modify their behavior.

Research: Both Taylor and Hoedt (1966) and Seidman (1967) looked for changes in writing as related to comment condition. Taylor and Hoedt found no significant differences. Seidman found non-significant though directional support for praise improving writing skill.

VII. The amount of reading students completed for the course.

Hypothesis: It is hypothesized that the type of instructor response that the students receive on their logs effects the amount of reading the students does for the course.

Rationale: Instructors find it helpful to know if different written reactions had different effects on the amount of reading students did for a course, i.e., they would want to know how to influence students to do the maximum amount of reading, other things equal.

Research: Both Seidman (1967) and Taylor and Hoedt (1966) found that teacher comments effect the amount of output (writing). Praise in each case caused the greatest amount of writing. The comments might very well have a similar effect on the amount of reading if they are acting as a generalized motivator.

VIII. The amount of time students estimated they spent writing their logs.

Hypothesis: It is hypothesized that the type of instructor response that the students receive on their logs effects the amount of time the students estimate they spend in writing their logs.

Rationale: College instructors might find it helpful to know if their written responses to student output caused estimated increases or decreases in the amount of time spent producing the output.

Research: Dale Brethower at the University of Michigan School of Education (personal interview) used only positive comments on student lab reports in an introductory psychology course and noted a great increase in the amount of time students reported that they spent in writing their reports. In the Taylor and Hoedt study (1966) where themes were written in class while children in the criticized group sat and waited for the end of class after they had completed their required theme, some of the children from the praised group would be more likely to ask for more paper so that they could try to write a second theme. (p. 83)

CHAPTER IV

METHOD

This chapter presents the development of the experimental design utilized to test the relationships presented in the previous chapter, the operational hypotheses developed, and some instrument validity and reliability checks.

Subjects

The sample consisted of all the students in two sections of the course, Human Growth and Learning (P280), taught by the experimenter in the spring of 1970 at the Indiana University Regional Campus at Fort Wayne. P280 is the required basic educational psychology course for teacher trainees. It is usually taken in the sophomore year. There were 33 subjects in both the morning (MW 9:30 - 11:45) and afternoon (MW 1:30 - 3:45) or a total of 66 subjects.

Each section was randomly divided (with controls for sex and age) into three treatment groups of equal size.

Materials

The following pre-measures were administered near the beginning of the semester before any logs were collected as controls to test the assumptions that the assignment of subjects to treatment groups had indeed been random, i.e.,

that the groups did not differ significantly on relevant dimensions. The scores on these instruments were not calculated until after the experiment was completed.

1. Preferred closeness of relationship with instructor.

This dimension is purported to measure the extent to which the student desires a close, warm, friendly relationship as opposed to a cold, distant, unfriendly relationship with the instructor. Students who markedly differed on this dimension might be expected to be effected differentially by teacher written reactions. The instrument "The Type of Teacher-Student Relationship I Prefer" (see Appendix I) was developed by the experimenter to assess this dimension. It was scored by assigning the number values shown for each blank and finding the sum total for each student.

2. Grade point average.

Each students' grade point average in college at I. U. Fort Wayne, when available, was obtained. Students who differed markedly in grade point and/or academic ability would very likely respond differently to teacher written reactions.

3. Past reading habits.

Students who had markedly different reading habits might be expected to have very different scores on the "Read-Questionnaire" administered near the end of the experiment.

The instrument "My Reading Habits" (see Appendix I) was developed by the experimenter to assess the past reading habits of the subjects. It was scored by taking the number

of the item checked by each student.

4. Achievement motivation.

This dimension is purported to measure the extent to which students are motivated by a desire to achieve academically. Students who differ markedly in achievement motivation might be expected to be effected differentially by instructor written reactions. The "Questionnaire" developed by Myers (1964) was used to assess this dimension (see Appendix I). It was scored as the sum of all item scores except number six which was reversed.

5. Intrinsic versus extrinsic motivation.

This dimension is purported to measure the extent to which students perceive themselves as having control over their environment (intrinsic) as opposed to students believing that events occur as the result of fate or luck (extrinsic). Students who differ markedly in this dimension might be expected to respond differentially to teacher written reactions. The instrument "Teacher Scale" (see Appendix I) developed by Rotter (1969) was used to assess this dimension. It was scored as the sum of the number of indicated items that were circled by the student. Some additional references are Rotter (1966), Liverant (1958), and Lefcourt (1966).

6. Perception of own writing ability.

This dimension measures the student's perception of himself as a writer. Students who differ markedly on this dimension might be expected to respond differentially to

teacher reactions. The instrument "Self Perception of Writing Ability" (see Appendix I) was developed for this study to assess this dimension. Two scores were obtained from this instrument. First, Items 1 and 2 were tabulated by having a = 7, b = 6, c = 5, d = 4, e = 3, f = 2, and g = 1 for each item and summing the two item scores. Then Item 3 was scored seperately by assigning the shown number values and summing these for each subject.

7. Self concept.

This dimension uses a semantic differential to determine how the student views himself. Students who differed markedly in self concept might be expected to be effected differentially by instructor written reactions.

The instrument "How Do You View Yourself" (see Appendix I) after Osgood, Suci, and Tannenbaum (1957) was used to assess this dimension. It was scored by adding the sum of the number values of the checked items.

8. Age

Age was obtained by asking the subject how old he or she was.

9. SAT-Verbal and SAT-Mathematics

SAT scores were obtained by examining the subjects' permanent records.

The following post-treatment measures were developed by the experimenter and administered after the experimental treatment was completed:

1. "Reading Questionnaire" (See Appendix I)

   This instrument was designed to measure the subject's perception of the amount of reading he had done for the course. Does the type of comment the student receives effect the perceived amount of reading he does for the course?

2. "Final Questionnaire" (See Appendix I)

   This instrument was designed to measure the dimensions discussed.

Procedure

The experimenter instructed the students early in the semester that each person would be required to turn in a reaction log every two weeks. The written directions given to the students are produced below:

> II. You must turn in a reaction log every other Wednesday. You will have until Thursday noon to turn them in. If for any reason you are not able to do so you must call me or talk to me either Tuesday or Wednesday by 10:30 P.M. If anyone fails to do either of the above the consequence is the lowering of the final grade in the course one letter grade.
>
> A. Reasons for requiring reaction logs.
>
> 1. To encourage you to be more active and critical in what you read and experience and to help you to keep a record of what you have learned from your reading.
>
> 2. To help answer some important research questions.
>
> B. Format: Please type your logs if you are able. You may turn in first drafts with the corrections and crossouts - this does not have to be a formal paper. If typing is a real hardship you may do them in longhand.

Try to include a carbon copy and please keep your returned logs till the end of the semester.

C. Evaluation: The logs will not be graded. Other than the above requirements they will not effect your grade in any way.

D. What should be included in them? Whatever you decide.

The grading contingency was enforced only once and that subject later (before the experiment was completed) stopped attending the course and had to be discarded as a subject. The only other stipulation was that students were instructed not to talk about nor show their logs to anyone else in the class. The pre-measures were administered before any logs were collected.

It was assumed that the extent to which the students saw the logs effecting their grades bore some relationship to the amount of time and effort that they put in on their logs. The students were told that they would have some voice in determining their grades. Most of them knew that most of the instructor's students the previous semester received A's and that the grades had been self-assigned. The grading (self-assigned grade and blanket A) were determined about the time the fourth log was due for each class. The latter logs (3rd, 4th, and 5th) tended to be shorter than the first two. This is probably at least partly due to students no longer believing that "good, long" logs will bring higher grades. Though it is impossible in retrospect to know to what extent the students perceived the logs as effecting their grades at each point in the semester, I surveyed my students from the

next semester who also were required to turn in logs and for whom the grading situation was very similar between their 3rd and 4th logs. I found that a very little over one third of the class believed that the length and/or quality of their logs would be likely to have some effect on their grades even though they were told that the logs would not be graded except in the event that they were not turned in.

Treatment

The logs were treated in the following manner: First, all the logs were measured for length with three measures taken. (1) Number of inches of writing. (2) Number of lines written. (3) Approximate average number of words per line.

Instructor Comments on Students' Logs

Condition 1: No Comment (NO). The experimenter placed a code number in the upper right hand corner of each log (for ease of handling) and returned each log. Most logs were returned the Monday following the Wesnesday they were turned in.

Condition 2: Non-Evaluative Comment (NON). The experimenter placed a number in the upper right hand corner and made between 1 and 7 comments (depending on the length of the log) of the following types: Asking question, answering student question, giving objective information on a topic discussed in the log, and reflecting--repeating what the student has written trying to capture the essential meaning while rephrasing it. For example: "Why do you say ___ ____ __?"

"I did ___ because ___ ___." "In 1969 there were ____ _____." "You seem to feel (or believe that ____ ___ ___."

Condition 3: Evaluative Comment (EVAL). The experimenter placed a number in the upper right hand corner and responded to the logs in this condition with between 1 and 7 comments of the following types: Agreeing with, praising, and encouraging the ideas expressed in the logs. For example: "Yes." "Good question!" "Keep trying, it takes time."

For each class five logs were turned in and treated as described above. Near the end of the fifth log phase the "Reading Questionnaire" was administered to both sections of P280 on the same day so that one class would not have had more time to read than the other class. Then, on the day when the fifth log was returned to the students in each class, the "Final Questionnaire" was administered to obtain additional post-treatment measures. When the students completed the "Final Questionnaire" the experiment was explained to them, their questions were answered concerning it, and their reactions to it were recorded. The experimenter offered to reread and react to any No Comment condition logs if the students desired for him to do so. Two students requested this.

During the course of the study five subjects were dropped. Three were dropped due to incomplete data. One subject moved and had to complete the course by correspondence, one went on a trip missing part of the experiment, and one stopped attending class. A fourth subject was dropped nen

he admitted that he had copied a log from a borrowed paper. It was felt that the emotions generated in this subject on being caught "cheating" (he thought he had though no one had ever told him that he could not copy a log) would contaminate his future responses. A fifth subject was dropped when on his first log he stated a plea that he not be treated as just a number, but as a person. He was in the NO group and nothing but a number would have been placed on his log. I refused to treat this person in this way. His log was commented on and he was removed from the experiment. Altogether one subject each from the NO and NON groups were dropped and three from EVAL leaving a total of 21 NO, 21 NON, and 19 EVAL treatment subjects.

Procedures and Methods of Data Analysis

After all the instruments were scored as specified in Appendix I there scores were entered on coding sheets. In addition, the length of the first and last log were obtained for each subject by multiplying the number of lines of each log by the average number of words per line for that log and entered on the coding sheets. For the "Final Questionnaire" the item score for each item that had a numerical value (1 to 6) or a check response (see Appendix I) was used. From the code sheets IBM cards were punched.

The following computer system located at Indiana University Regional Campus at Fort Wayne was employed in processing the data:

1. A 360/20 IBM terminal was located at the school.
2. This fed into a CDC 6500 at Purdue University in Lafayette, Indiana.

The data were subjected to two kinds of analysis. These were:

1. Contingency table analysis.
2. Correlation analysis.

Procedures of the contingency table analysis:

The contingency table analysis required that the data be coded into categories or class intervals. (See Appendix II for the description of the interval assignment for each variable.) The contingency table analysis was performed by the computer program FREQ 7.1-R (See Appendix II).

In addition to producing selected two-way and three-way cross-classification tables, this program generated the following statistics for the analysis of these tables: Means, standard deviations, chi-squares, and contingency coefficients. Of these, principal reliance was placed on the chi-square value computed for each two-way table. The computer program did not merely compute the chi-square value for each table. The program tested each table for each of several characteristics in order to determine the appropriateness of the chi-square statistic as a measure of association. (See Appendix III for the assumptions which must be met in order for the chi-square test to be valid.)

Procedures of the Correlation Analysis:

The correlation analysis was performed by the computer program BMD03D (see Appendix III). A 76 by 76 correlation matrix was computed in which the i,jth entry gives the correlation between the ith and jth variables. Every variable was correlated with every other variable in the study. The use of the correlation coefficient cannot be fully justified since it is most appropriate for continuous, normally distributed data. The data obtained from the correlation matrix was used mainly as a validity and reliability check on the instruments used in this study.

Operational Hypotheses

In this section the item and instruments used to test the hypotheses developed in Chapter II are shown and reliability and validity checks presented. Items not otherwise indicated are from the "Final Questionnaire" (see Appendix I). The items were developed by the experimenter in order to tap the dimensionality of the subjects' attitudes, beliefs, and values, i.e., the criterion of face validity was used in their construction--that the items appear to measure that which they are purported to measure. Correlations significant at the .05 level or less are indicated by one star (*) and those at the .01 level or less by two stars (**).

1A. The student's perception of the level of his own learning.

TABLE 1

ITEM INTERCORRELATIONS FOR HYPOTHESIS IA

	Item	5	18	22	25
5.	I feel that I really have gotten a lot out of P280 so far.		-.53**	-.58**	.43**
18.	I think I am getting less out of this course than the rest of my classes.			.66**	-.09
22.	I didn't learn very much at all in this class so far.				-.22
25.	I think I am getting much more out of this course than most of my fellow students.				

**p < .01

This cluster holds together well except for the low correlation of items 25 and 22.

IB. The student's perception of the instructor's attitude toward the students.

Items 4 and 20 r = -.34**

4. I don't believe that the instructor cares whether I learn anything or not in here.

20. I think that the instructor cares a great deal about me as an individual.

These two items which are reversals of each other show a highly significant negative relationship.

IC. The student's perception of the quality of his logs.

Items 27 and 38 r = -.03.

27. I think my logs are much better than those of my class mates.

38. I think my logs are much worse than those of the other students in this class.

This low correlation is apparently due to the unreliability of the items. For Item 27 forty-seven students saw their logs as worse than those of others and thirteen saw them as better. For Item 38 seventeen saw their logs as worse and forty-three saw them as better. One explanation of this nearly complete reversal is that most students misread one of the items. Another more likely possibility is that most students neither saw their logs as better nor worse; that is, they didn't know how they compared with others. Thus, they felt that they had to disagree with each statement since "I don't know" response was not allowed.

ID. The student's perception of the relevance of his logs to other aspects of the course.

Item 12 and 40 r = -.66**.

12. I thought the logs seemed unrelated to the rest of the course.

40. The logs were very relevant to the rest of the course.

These two items show a very strong negative relationship indicating that they are very likely measuring the same thing one stated positively and one stated negatively.

IE. The student's perception of the instructor's evaluation of the student's logs.

Items 6 and 11 r = -.61**.

6. The instructor didn't seem to like my logs.

11. The instructor seemed to be very pleased with my logs.

This is a very high relationship between these two items.

IF. The student's perception of teaching as a career.

TABLE 2

ITEM INTERCORRELATIONS FOR HYPOTHESIS IF

Item	10.	17.	32.	41.
10. I don't think that I will like being a teacher.		-.04	-.45**	-.87**
17. Teaching is hard work.			.03	-.06
32. Teaching has many rewards.				.49**
41. I'm sure that I will really like being a teacher.				

**p < .01

This cluster holds together well except for Item 17. "Teaching is hard work." It is the only item which is really neither positive or negative so it does not relate to the other three evaluative items.

IG. The student's perception of the extent of congruity between himself and the instructor.

Items 1 and 15 r= -.02.

1. The instructor and I shared many of the same attitudes.

15. The instructor and I do not agree most of the time on educational issues.

In calculating a correlation the question asked is what happens to y as x varies. In looking at the raw x data for these items most people answered 1 with a 5 or 6 and Item 15 with a 1 or a 2. Since both x and y vary so little (have a very restricted range) one is very unlikely to obtain a strong correlation. The experimenter is already fairly certain of each subject's response to both Items 1 and 15 since almost everyone gave the same response. Knowing how a person answered one of the items adds nothing to the knowledge of how they would answer the other item. This also means that Items 1 and 15 are not very useful items since they tell very little about an individual.

IIA. The student's attitude toward writing his own logs.

Items 13 and 46 r= -.68**.

13. I always looked forward to writing my logs.

46. I usually dreaded having to write my logs.

These items which are clearly opposites correlate high negatively as would be expected.

IIB. The student's attitude toward logs as a method of learning.

TABLE 3

ITEM INTERCORRELATIONS FOR HYPOTHESIS IIB

Item	2.	8.	9.	16.	19.	28.	35.	36.	39.	44.
2. The logs were the most important part of the course.	1	.51**	-.57**	.52**	-.38**	-.36**	.51**	.38**	-.59**	-.12
8. I hope we can continue to use logs for the rest of the semester.		1	-.68**	.42**	-.44**	-.60**	.61**	.59**	-.60**	-.28*
9. The logs were not helpful.			1	-.35**	.47**	.49**	-.49**	-.55**	.45**	.04
16. The logs motivated me to read more than I might have without them.				1	-.36**	-.39**	.52**	.38**	-.68**	-.19
19. I would never want to use logs in my own teaching.					1	.53**	-.43**	-.74**	.44**	.07
28. If I never write another reaction log it will be too soon.						1	-.59**	-.60**	.60**	.09
35. The logs helped me to put together and understand what I read and experienced.							1	.66**	-.70**	-.25
36. I would very much like to use logs when I teach.								1	-.53**	-.16

TABLE 3 (Continued)

Item	2.	8.	9.	16.	19.	28.	35.	36.	39.	44.
39. The logs were not an important part of this course.									1	.21
44. The logs seemed to discourage me from reading.										1

*p <. 0 5

**p <.01

This cluster holds together extremely well. The only item that is not strong is 44 which does not even correlate very highly with its opposite Item 16. This is probably again due to restricted range for Item 44. Only three subjects responded with a 4, 5, or 6. All the rest of the responses were with 1, 2, and 3.

IIC. The student's attitude toward the instructor's response to his logs.

TABLE 4

ITEM INTERCORRELATIONS FOR HYPOTHESIS IIC

Item	26.	30.	45.	47.	53.
26. The instructor's response on my logs was very helpful.	1	-.36**	-.81**	-.14	-.71**
30. I would like to have had more reactions from the instructor to my logs.		1	.30*	-.40**	.09
45. The instructor's response to my logs was not very helpful.			1	.27*	.57**
47. I would like to have had less of a response from my instructor on my logs.				1	.21
53. Were the comments helpful?					1

*$p < .05$

**$p < .01$

Many of the correlations (9 out of 15 are significant or highly significant indicating an association between most of the items.

IID. The student's attitude toward having his logs returned by the instructor.

TABLE 5

ITEM CORRELATIONS FOR HYPOTHESIS IID

Item	24.	31.	37.	54.
24. I disliked the thought of getting my logs back.	1	.54**	-.34**	-.26
31. I am quite nervous when the logs are being returned.		1	-.24	-.51**
37. I always looked forward to getting my logs back from the instructor.			1	.36*
54. Would you have preferred to not have the teacher comment on your logs?				1

*$p < .05$

**$p < .01$

This cluster holds together very well.

IIE. The student's attitude toward engaging in new experiences (risk taking).

Items 3 and 21 r = -.14.

3. I would rather keep to safe and familiar things as opposed to new and different things even if it means making less of a gain.

21. I would rather do something new and different than the same old thing even if I might be risking failure.

Looking at Tables 6 and 7, it looks as if restricted range might be the cause of the low correlation again as in IG.

TABLE 6

RESPONSE DISTRIBUTION FOR ITEM 3

Response	Frequency
1	34
2	12
3	6
4	5
5	2
6	2

TABLE 7

RESPONSE DISTRIBUTION FOR ITEM 21

Response	Frequency
1	0
2	2
3	3
4	14
5	29
6	13

IIF. The student's attitude toward the course.

Items 14 and 42 $r = -.27$*

14. I enjoy P280 very much.

42. I have not liked P280 very much so far.

These two items do correlate significantly even overcoming some problems of restricted range.

IIG. The student's attitude toward being part of an experiment.

Items 33 and 48 $r = -.36$**

33. I didn't like the instructor's use of the reaction logs as part of an experiment.

48. I was pleased to be part of an experiment.

These items are closely related.

III. The student's values regarding student-teacher closeness versus distance.

TABLE 8

ITEM INTERCORRELATION FOR HYPOTHESIS III

Item	7.	23.	29.	34.	43.
7. Students should think of the instructor as one of them.	1	-.03	.09	-.30*	.01
23. Good teachers have the respect of their students.		1	-.19	.09	.35*
29. Good discipline is more important than the students liking the instructor.			1	-.06	-.38**
34. A teacher should be respected.				1	.14
43. It is important for a teacher to be liked by his students.					1

*$p < .05$

**$p < .01$

These items do not relate well to each other. These items are for the most part difficult and ambiguous to interpret so that it is not surprising that they do not correlate highly.

IV. The student's reading of the instructor's reactions.

52. Did you read the comments on your logs?

V. Observed changes in the length of the logs.

The total number of lines and the approximate average number of words per line were counted for each log turned in. Long quotes were excluded from this count.

VI. The student's efforts to change the content of the logs.

51. Did you attempt to change the content of your logs in the hope that I would respond or respond differently to them?

51A. How did you change the content? (Not subjected to statistical analysis due to small response.)

VII. The amount of reading each student completed for the course.

The Reading Questionnaire is presented in Appendix I.

VIII. The amount of time each student estimated that he spent working on his logs.

55. About how much time did you spend per week writing your logs?

56. Did the amount of time tend to increase or decrease as the semester wore on?

Items 55 and 56 $r = .14$

This is not a very meaningful correlation since there is no reason to suspect that amount of time and increase or decrease in time should be related.

Validity and Reliability Checks

This section is divided into two parts. In part A, randomization checks, chi-square contingency tables between

the pre-measures and treatment group are examined to determine whether or not the characteristics of the subjects in the three treatment groups differ more than would be expected by chance. In part B correlations between the pre-measures and all other variables in the study are examined and discussed.

A. Randomization Checks

Chi-square contingency tables between treatment group and all pre-measures (also SAT and Grade Point) were generated with only one significant chi-square obtained. Intrinsic-Extrinsic Control (I-E) when crossed with treatment group yielded a chi-square value of 7.1 which was significant at the .05 level.

TABLE 9

INTRINSIC-EXTRINSIC CONTROL AS IT RELATES TO TREATMENT GROUP

	NO	NON	EVAL	TOTAL
INTRINSIC	15	6	10	31
EXTRINSIC	6	14	9	29
TOTAL	21	20	19	60

Chi-square = 7.1*
Degrees of freedom = 2

*$p < .05$

For all other crosses of independent measures with treatment group the experimenter failed to reject the null hypothesis of random assignment with the chi-square test. By inspecting the cell values in Table 9 it can be observed that those subjects toward the intrinsic end of the I-E scale tended to fall in the NO group and those toward the extrinsic end of the scale tended to fall in the NON group. This finding brings into question significant treatment effects found in this study. Are they actually due to differential treatment or are they just a manifestation of the fact that the treatment groups were initially different as measured by the I-E scale?

A check was done to examine the initial I-E differences. A chi-square analysis was initiated crossing I-E with all the post-treatment measures. Significant chi-square were found between I-E and Item 8 ("I hope we can continue to use logs the rest of the semester."), 13 ("I always looked forward to writing logs."), and 40("The logs were very relevant to the rest of the course.") In looking at Tables 10, 11, and 12 it can be seen that students toward the intrinsic end of the I-E scare are more likely to want to continue logs, like to write logs, and see logs as relevant to the rest of the course; whereas, students who are toward the extrinsic end of the scale are more likely to respond just the opposite: they don't want to continue logs, don't like to write them, and see the logs as irrelevant to the rest of the course.

TABLE 10

INTRINSIC-EXTRINSIC CONTROL AS IT RELATES TO STUDENTS' ATTITUDES REGARDING USE OF LOGS

	Continue Logs	Not Continue Logs	Total
Intrinsic	25	6	31
Extrinsic	13	16	29
Total	38	22	60

*p < .05

Chi-square = 6.8*
Degrees of freedom = 1

TABLE 11

INTRINSIC-EXTRINSIC CONTROL AS IT RELATES TO STUDENTS' ATTITUDES REGARDING WRITING LOGS

	Write Logs	Not Write Logs	Total
Intrinsic	18	13	31
Extrinsic	8	21	29
Total	26	34	60

*p < .05

Chi-square = 4.5*
Degrees of freedom = 1

TABLE 12

INTRINSIC-EXTRINSIC CONTROL AS IT RELATES TO STUDENTS' PERCEPTIONS OF RELEVANCE OF LOGS

	Logs Relevant	Logs Not Relevant	Total
Intrinsic	27	4	31
Extrinsic	16	13	29
Total	43	17	60

*$p < .05$

Chi-square = 6.0*
Degrees of freedom = 1

Looking back to Chapter IV, Method, it can be seen that the scale is purported to measure the extent to which students perceive themselves as having control over their environment (intrinsic) as opposed to students believing that events occur as the result of fate or luck (extrinsic). It almost seems as if students who think things are due to fate or luck don't want to work at things, i.e., writing logs. This seems almost too obvious to be correct.

Another check was completed after experimental treatments were applied. The amount of discussion with other students about the logs and the number of students who saw each others papers were explored with items 49 "Did you see anyone else's paper?" of the "Final Questionnaire". There

were no significant chi-squares between treatment groups and these items. Item 49A "What did you learn from them?" and 50A "What did you notice if anything?" did not yield interpretable data.

B. Correlations between pre-measures and all other variables.

1. "The Type of Teacher Student Relationship I Prefer"

TABLE 13

SIGNIFICANT CORRELATIONS BETWEEN THE TYPE OF TEACHER STUDENT RELATIONSHIP I PREFER ON ALL OTHER VARIABLES

Item	Correlation
6. The instructor didn't seem to like my logs.	.27*
23. Good teachers have the respect of their students.	.36**
30. I would like to have had more reactions from the instructor to my logs.	.30*
34. A teacher should be respected by his students.	-.25*
43. It is important for a teacher to be liked by his students.	.25*
70. Year in school Fresh. = 1, Soph. = 2, Jr. = 3, Sr. = 4, Grad. = 5	-.25*
72. Does student work 1 = yes, 2 = no	-.27*
73. Number of hours student works per week.	.27*

*$p < .05$

**$p < .01$

A high score on this instrument indicates a desire for a close, warm, friendly relationship. Students who desired this kind of relationship were more likely to see the instructor as not liking their logs (6), wanted more reactions to their logs (30), believed that a teacher should be liked by his students (43), tended to be underclassmen (70) and were more likely to work and work longer hours (72 and 73) than those students who preferred a more distant relationship. The reversal in the correlations of items 23 and 34 is unexplained except to note that these items correlate only .09 with each other (see TABLE 8).

Grade Point Average

TABLE 14

SIGNIFICANT CORRELATION BETWEEN GRADE POINT AVERAGE ON ALL OTHER VARIABLES

Item	Correlation
9. The logs were not helpful.	-.37**
15. The instructor and I do not agree most of time on educational issues.	.34**
41. I'm sure that I will really like being a teacher.	-.28*
48. I was pleased to be part of an experiment.	-.34**
58. Length in number of words of first log.	.27*
59. Length of the last log.	.27*
65. "Questionnaire" (achievement motivation).	.43**

*$p < .05$

**$p < .01$

2. People with higher grade points tended to find the logs unhelpful (9) possibly because they were not graded. They also tended to write longer logs (58) and have higher achievement motivation (65). Interestingly and disappointingly the thought of becoming a teacher appled less to them.

3. "My Reading Habits" (See Table 15) correlates negatively (low score indicating subjects liked to read a lot) with many positive items related to the logs and the class (8, 13, 35, etc.) and positively with many negative aspects (4, 19, 46). It also correlates negatively with length of logs (58 and 59), Reading Questionnaire score (60), Achievement Motivation (65), and positively with I-E. This indicates that those who see themselves as reading a lot, write more, have higher achievement motivation and see events as due to their own efforts more than due to chance.

4. The most interesting correlations with Achievement Motivation (See Table 16) were length of the first and last logs (58 and 59), total score on the final Reading Questionnaire (60), My Reading Habits (66), and I-E (68). People with high achievement motivation tended to write more, read more (reading habits--the lower the score the more the subject sees himself as reading), and tended to see things as due to their own efforts rather than chance (low I-E score). These would all be expected results for people with high achievement motivation.

TABLE 15

SIGNIFICANT CORRELATION BETWEEN MY READING HABITS AND ALL OTHER VARIABLES

Item	Correlation
4. I don't believe that the instructor cares whether I learn anything or not in here	.27*
8. I hope we can continue to use logs for the rest of the semester.	-.41**
13. I always looked forward to writing my logs.	-.28*
17. Teaching is hard work.	-.30*
19. I would never want to use logs in my own teaching.	.32*
30. I would like to have had more reactions from the instructor to my logs.	-.29*
35. The logs helped me to put together and understand what I read and experienced.	-.28*
36. I would very much like to use logs when I teach.	-.27*
38. I think my logs are much worse than those of the other students in this class.	.28*
40. The logs were very relevant to the rest of the course.	-.29*
46. I usually dreaded having to write my logs.	.36**
58. Length in number of words of first log.	-.38**
59. Length of the last log.	-.27*
60. Total score on final "Reading Questionnaire".	-.41**
64. "Self Perception of Writing Ability" (Item 3)	-.28*
65. "Questionnaire" (achievement motivation).	-.58**
68. "Intrinsic-Extrinsic Control of Reinforcement."	.38**
69. Age	-.37**
72. Does student work 1 = yes, 2 = no	-.26*
73. Number of hours student works per week.	.30*

*$p < .05$

**$p < .01$

TABLE 16

SIGNIFICANT CORRELATION BETWEEN QUESTIONNAIRE (ACHIEVEMENT MOTIVATION) ON ALL OTHER VARIABLES

Item	Correlation
6. The instructor didn't seem to like my logs.	-.26*
12. I thought the logs seemed unrelated to the rest of the course.	-.30*
19. I would never want to use logs in my own teaching.	-.28*
20. I think that the instructor cares a gread deal about me as an individual.	-.30*
26. The instructor's response on my logs was very helpful.	.26*
27. I think my logs are much better than those of my classmates.	.30*
34. A teacher should be respected by his students.	.27*
35. The logs helped me to put together and understand what I read and experienced.	.28*
37. I always looked forward to getting my logs back from the instructor.	.35**
38. I think my logs are much worse than those of the other students in this class.	-.46**
42. I have not liked P280 very much so far.	-.27*
46. I usually dreaded having to write my logs.	-.32*
53. Were the comments helpful?	-.33*
58. Length in number of words of first log.	.26*
59. Length of the last log.	.48**
60. Total score on final "Reading Questionnaire."	.35**
63. "Self Perception of Writing Ability"(items 1 and 2).	.35**
64. "Self Perception of Writing Ability" (item 3).	.39**
66. "My Reading Habits".	-.58**
67. "How Do You View Yourself" (self concept).	.39**
68. "Intrinsic-Extrinsic Control of Reinforcement.	-.27*
69. Age.	.27*
76. Grade point average.	.43**

*$p < .05$

**$p < .01$

5. "Intrinsic-Extrinsic Control of Reinforcement." students believing that events usually occur as a result of fate or luck (Extrinsic) tended to feel that they got less out of the course than others (5), didn't want to write more logs (8), don't think they will like being a teacher (10), don't think the instructor cares about them (20), etc. They also tended to write shorter logs, had low achievement motivation, poor reading habits, and tended to be young. (See Table 17)

6. For the two measures of "Self Perception of Writing Ability" (See Tables 18, 19) it is interesting to note that many of the positive correlations are with items measuring liking of the logs and liking to write them (8, 13, 36, 37) and many of the negative correlations are with items expressing dislike for the logs (19, 24, 28, 38, 46). This would indicate, not surprisingly, that students who have a positive self-perception of their writing ability tended to like the logs. The two parts of the instrument correlate beyond the .01 level ($r = .65$) with each other indicating that they are measuring somewhat the same (dimension). They correlated with both achievement motivation (65) and self concept (67) indicating that students who see themselves as working hard and view themselves positively also tend to view their writing ability positively.

How do you view yourself (Self Concept).

7. People with high self concepts tended to see the instructor caring about them and agreeing with them (15, 20), see their

TABLE 17

SIGNIFICANT CORRELATIONS BETWEEN INTRINSIC-EXTRINSIC CONTROL OF REINFORCEMENT ON ALL OTHER VARIABLES

Item	Correlation
5. I feel that I really have gotten a lot out of P280 so far.	-.34**
8. I hope we can continue to use logs for the rest of the semester.	-.27*
10. I don't think that I will like being a teacher.	.26*
12. I thought the logs seemed unrelated to the rest of the course.	.26*
13. I always looked forward to writing my logs.	-.30*
14. I enjoy P280 very much.	-.29*
18. I think I am getting less out of this course than the rest of my classes.	.31*
19. I would never want to use logs in my own teaching.	.29*
20. I think that the instructor cares a great deal about me as an individual.	-.38**
21. I would rather do something new and different than the same old thing even if I might be risking failure.	-.27*
22. I didn't learn very much at all in this class so far.	.31*
27. I think my logs are much better than those of my classmates.	-.27*
40. The logs were very relevant to the rest of the course.	-.34**
41. I'm sure that I will like being a teacher.	-.25*
46. I usually dreaded having to write my logs.	.28*
59. Length of the last log.	-.26*
65. "Questionnaire" (achievement motivation).	-.27*
66. "My Reading Habits."	.38**
69. Age	-.35**

*$p < .05$

**$p < .01$

TABLE 18

SIGNIFICANT CORRELATIONS BETWEEN SELF PERCEPTION OF WRITING ABILITY (ITEMS 1 AND 2 COMBINED) ON ALL OTHER VARIABLES

Item	Correlation
8. I hope we can continue to use logs for the rest of the semester.	.26*
13. I always looked forward to writing my logs.	.36**
19. I would never want to use logs in my own teaching.	-.46**
24. I disliked the thought of getting my logs back.	-.29*
25. I think I am getting much more out of this course than most of my fellow students.	.32*
27. I think my logs are much better than those of my classmates.	.42**
28. If I never write another reaction log it will be too soon.	-.26*
29. Good discipline is more important than the students liking the instructor.	-.32*
36. I would very much like to use logs when I teach.	.30*
37. I always looked forward to getting my logs back from the instructor.	.29*
38. I think my logs are much worse than those of the other students in this class	-.44**
39. The logs were not an important part of this course.	-.28*
46. I usually dreaded having to write my logs.	-.31*
59. Length of the last log.	.26*
64. "Self Perception of Writing Ability"(item 3).	.65**
65. "Questionnaire" (achievement motivation).	.35**
67. "How Do You View Yourself" (self concept).	.38**

*$p < .05$

**$p < .01$

TABLE 19

SIGNIFICANT CORRELATIONS BETWEEN SELF PERCEPTION OF WRITING ABILITY (ITEM 3) ON ALL OTHER VARIABLES

Item	Correlation
19. I would never want to use logs in my own teaching.	-.35**
20. I think that the instructor cares a great deal about me as an individual.	.26*
32. Teaching has many rewards.	.27*
38. I think my logs are much worse than those of the other students in this class.	-.40**
46. I usually dreaded having to write my logs.	-.31*
58. Length in number of words of first log.	.38**
63. "Self Perception of Writing Ability" (items 1 and 2).	.65**
65. "Questionnaire" (achievement motivation).	.39**
66. "My Reading Habits".	-.28*
67. "How Do You View Yourself" (self concept).	.52**
71. Marital state Married = 1, Single = 2.	-.40**
72. Does student work 1 = yes, 2 = no.	.26*

*$p < .05$

**$p < .01$

logs as better than those of other students (38), have a high perception of writing ability (63 and 64), and a high achievement motivation (65).

TABLE 20

SIGNIFICANT CORRELATION BETWEEN HOW DO YOU VIEW YOURSELF (SELF CONCEPT) ON ALL OTHER VARIABLES

Item	Correlation
9. The logs were not helpful.	.26*
14. I enjoy P280 very much.	.30*
15. The instructor and I do not agree most of the time on educational issues.	-.26*
20. I think that the instructor cares a great deal about me as an individual.	.34**
29. Good discipline is more important than the students liking the instructor.	-.26*
32. Teaching has many rewards.	.27*
38. I think my logs are much worse than those of the other students in this class.	-.33**
63. "Self Perception of Writing Ability" (items 1 and 2).	.38**
64. "Self Perception of Writing Ability" (item 3).	.52**
65. "Questionnaire" (achievement motivation).	.39**

*$p < .05$

**$p < .01$

Age.

8. Older subjects tended to have positive attitudes toward their logs (6, 13, 19, etc.), wrote a lot (58 and 59), had higher achievement motivation, good reading habits, and were more likely to be intrinsic than extrinsic. This sounds like the hard working, highly motivated student returning to school after spending time in the working world. (See Table 21)

9. SAT-Verbal and SAT-Mathematics.

Due to relative unavailability of these scores (they were only available for 42 of the 61 subjects) and the fact that almost all of the scores available were from the youngest subjects the few significant correlations obtained (74 and 74) are not amenable to meaningful interpretation.

TABLE 21

SIGNIFICANT CORRELATION BETWEEN AGE
ON ALL OTHER VARIABLES

Item	Correlation
6. The instructor didn't seem to like my logs.	-.29*
13. I always looked forward to writing my logs.	.28*
19. I would never want to use logs in my own teaching.	-.32*
24. I disliked the thought of getting my logs back.	-.28*
36. I would very much like to use logs when I teach.	.26*
38. I think my logs are much worse than those of the other students in this class.	-.27*
46. I usually dreaded having to write my logs.	-.36**
55. About how much time did you spend per week writing your logs?	.28*
58. Length in number of words of first log.	.52**
59. Length of the last log.	.47**
60. Total score on final "Reading Questionnaire."	.62**
65. "Questionnaire" (achievement motivation).	.27*
66. "My Reading Habits."	-.36**
68. "Intrinsic-Extrinsic Control of Reinforcement."	-.35**
70. Year in school Fresh. = 1, Soph. = 2, Jr. = 3, Sr. = 4, Grad. = 5.	.32*
71. Marital state Married = 1, Single = 2.	-.57**
72. Does student work 1 = yes, 2 = no.	.57**
73. Number of hours student works per week.	-.46**

*$p < .05$

**$p < .01$

TABLE 22

SIGNIFICANT CORRELATION BETWEEN SAT - VERBAL ON ALL OTHER VARIABLES

Item	Correlation
33. I didn't like the instructor's use of the reaction logs as part of an experiment.	-.32*
58. Length in number of words of first log.	-.37*

*p < .05

**p < .1

TABLE 23

SIGNIFICANT CORRELATION BETWEEN SAT - MATH ON ALL OTHER VARIABLES

Item	Correlation
28. If I never write another reaction log it will be too soon.	.38*

*p < .05

**p < .01

CHAPTER V

DATA ANALYSIS

Inferential Data Analysis

This section is divided into two parts. In the first part the results for each hypothesis tested in this study are examined: Each hypothesis is listed, each item used to test it is listed with the chi-square resulting from the cross between the item and treatment group given, tables are presented when necessary to illuminate the results, and a short discussion of the meaning and implications is given. The original chi-square tables are presented in APPENDIX IV. In the second part of this section a more informal presentation of a few post hoc results is presented.

Hypothesis IA: The students' perceptions of the level of their own learning.

5. I feel that I really have gotten a lot out of P280 so far. Chi-square = 5.6.

18. I think I am getting less out of this course than the rest of my classes. Chi-square = 3.5.

22. I didn't learn very much at all in this class so far. Chi-square = 2.4.

25. I think I am getting much more out of this course than most of my fellow students. Chi-square = .4.

APPENDIX IV TABLES 5, 18, 22, and 25.

Although no significant chi-squares were obtained in the crosses between treatment group and these items, it can be observed in TABLE 24

TABLE 24

PERCENTAGES OF SUBJECTS WHO FAVORABLY PERCEIVED THE LEVEL OF THEIR LEARNING BY TREATMENT GROUP FOR ITEMS 5, 18, 22 and 25

Treatment Group	Item			
	5	18	22	25
NO	100	95.2	95.2	57.1
NON	76.5	81	85.7	52.4
EVAL	78.9	73.7	78.9	47.4

that for all four items the subjects who received NO comment had more favorable perceptions of the level of their learning in the course than those who received NON or EVAL comments. This result could be explained by students receiving NO comments on their logs perceiving their learning in the course more important as opposed to whose who received comments on their logs valuing the logs more highly. The chi-square of 5.6 for item 5 is very close to the value of 6.0 needed for significance at the .05 level. It is very likely that a larger sample size would have resulted in one or more of

items designed to measure this hypothesis reaching significance.

Hypothesis IB: The students' perceptions of the instructor's attitude toward the students.

4. I don't believe that the instructor cares whether I learn anything or not in here. Chi-square = .26.

20. I think that the instructor cares a great deal about me as an individual. Chi-square = .01.

APPENDIX TABLES 4 and 20.

No significant chi-squares were obtained on the cross between the items that compose this hypothesis and treatment group nor are there any numerical differences at all between groups. It appears that the students' perceptions of the instructor's caring concerning the students and their learning was strongly communicated (only seven subjects agreed with item 4 and fifty-five agreed with item 20) and that the caring was communicated in ways other than by his comments on the students' logs.

Hypothesis IC: The students' perceptions of the quality of their logs.

27. I think my logs are much better than those of my classmates. Chi-square = .1.

38. I think my logs are much worse than those of the other students in this class. Chi-square = 3.8

APPENDIX IV TABLES 27 and 38.

No significant differences were obtained for the

crosses between treatment group and items 27 and 38. There is an interesting tendency in these items for students to reverse themselves. When asked to state their agreement or disagreement with the statement "I think my logs are much better than those of my classmates." 47 of 61 disagreed. When asked to agree or disagree with the statement "I think my logs are much worse than those of the other students in this class." 43 of 61 also disagreed making the data from these two items seem to contradict. The key to this apparent contradiction probably lies in the use of the word 'much' in both items causing most subjects to disagree with each item. Possibly less extremely worded items would bring to light differences in the students' perceptions of the quality of their logs resulting from different comment styles.

Hypothesis ID: The students' perceptions of the relevance of their logs to other aspects of the course.

12. I thought the logs seemed unrelated to the rest of the course. Chi-square = 3.7.

40. The logs were very relevant to the rest of the course. Chi-square = .8.

APPENDIX IV TABLES 12 and 40.

Although no significant differences were obtained in the crosses between treatment group and items 12 and 40 there is a slight tendency in both of these items for EVAL subjects to be more likely to perceive the logs as related to the course than NON and NO treatment group subjects. This tendency is shown in TABLE 25 which combines the frequencies

of items 12 and 40. It is quite possible that a large sample size would have resulted in the chi-square for item 12 achieving significance.

TABLE 25

COMBINED FREQUENCIES FOR ITEM 12 "I THOUGHT THE LOGS SEEMED UNRELATED TO THE REST OF THE COURSE." AND ITEM 40 "THE LOGS WERE VERY RELEVANT TO THE REST OF THE COURSE."

Treatment Group	Related	Not Related
NO	30	12
NON	31	11
EVAL	33	5

Hypothesis IE: The students' perceptions of the instructor's evaluation of their logs.

6. The instructor didn't seem to like my logs. Chi-square = 3.6.

11. The instructor seemed to be very pleased with my logs. Chi-square = 7.1.

APPENDIX IV, TABLES 6 and 11.

Although a significant chi-square was obtained between treatment group and item 11 the chi-square statistic may not be validly used if 20 per cent of the cells have expected frequencies which are less than 5 which is the case for this item. (APPENDIX III)

TABLE 26

PERCENTAGE OF SUBJECTS WHO PERCEIVED THE INSTRUCTOR AS LIKING THEIR LOGS FOR ITEM 6 "THE INSTRUCTOR DIDN'T SEEM TO LIKE MY LOGS." AND ITEM 11 "THE INSTRUCTOR SEEMED TO BE VERY PLEASED WITH MY LOGS."

Treatment Group		
	6	11
NO	78.9	57.9
NON	95.2	76.2
EVAL	94.7	94.7

It can be seen in TABLE 26 that items 6 and 11 shows a strong though non-significant tendency for more subjects who received both EVAL and NON comments to perceive the instructor as liking their logs relative to those who received NO comment. Item 11 also shows a slight trend for EVAL subjects to percieve the instructor as liking their logs more often than NON.

Hypothesis IF: The students' perceptions of teaching as a career.

10. I don't think that I will like being a teacher. Chi-square = 3.2.

17. Teaching is hard work. Chi-square = .51.

32. Teaching has many rewards. Chi-square = 6.3.

42. I'm sure that I will really like being a teacher. Chi-square = 3.9

APPENDIX IV TABLES 10, 17, 32, and re.

A significant chi-square was obtained in the cross between treatment group and item 32 but the assumption that fewer than 20 per cent of cells should have an expected frequency of less than 5 was violated. None of the other crosses were significant. If the percentages of responses favorable to teaching from items 10, 32, and 41 are examined (those items in which the frequencies differ between treatment groups) it can be seen in TABLE 27

TABLE 27

PERCENTAGES OF SUBJECTS WHO FAVORABLY PERCEIVED TEACHING AS A CAREER AS IT RELATES TO TREATMENT GROUP FOR ITEMS 10, 32, AND 41

Treatment Group	Item		
	10	32	41
NO	95.2	100	95.2
NON	76.2	95.2	76.2
EVAL	78.9	78.9	73.7

there is some tendency for subjects who received NON and EVAL comments to have a less favorable attitude toward teaching than those who received NO comments. Two possible reasons for these results are that people differed initially in their perceptions of teaching (this was not checked at

the beginning of the experiment) or that receiving either NON or EVAL comments on their logs resulted in some students perceiving teaching less favorably. Possibly a larger sample size would have achieved significance results without violations for one or more of the items of this dimension.

Hypothesis IG: The students' perceptions of the extent of congruity between themselves and the instructor.

1. The instructor and I shared many of the same attitudes. Chi-square = .4.
15. The instructor and I do not agree most of the time on educational issues. Chi-square = 6.8.

APPENDIX IV TABLES 1 and 15.

The chi-square cross between treatment group and item 15 is significant at the .05 level, but both the assumption that one fifth or more of the expected cell frequencies should not be less than five and that none of the expected cell frequencies be less than one were violated. The significant chi-square can thus not be meaningfully interpreted. It appears that students' perceptions of congruity between themselves and the instructor were not effected by the comment style they received on their logs.

Hypothesis IIA: The students' attitudes toward writing their own logs.

13. I always looked forward to writing my logs. Chi-square = .1
46. I usually dreaded having to write my logs. Chi-square = 1.6

APPENDIX IV TABLES 13 and 46.

There are no significant chi-squares in the crosses between treatment group and items 13 and 46. It appears that the type of comment received had no measurable effect on the students' attitudes toward writing their logs.

Hypothesis IIB: The students' attitudes toward logs as a method of learning.

2. The logs were the most important part of the course. Chi-square = 6.9*.

8. I hope we can continue to use logs for the rest of the semester. Chi-square = 2.1.

9. The logs were not helpful. Chi-square = 9.1*.

16. The logs motivated me to read more than I might have without them. Chi-square = 1.6.

19. I would never want to use logs in my own teaching. Chi-square = .3.

28. If I never write another reaction log it will be too soon. Chi-square = .9.

35. The logs helped me to put together and understand what I read and experienced. Chi-square = 2.5.

36. I would very much like to use logs when I teach. Chi-square = 4.6.

39. The logs were not an important part of this course. Chi-square = 1.1.

44. The logs seemed to discourage me from reading. Chi-square = 2.3.

*$p < .05$

APPENDIX IV TABLES 2, 8, 9, 16, 19, 28, 35, 36, 39, and 44.

The chi-square between treatment group and item 2 "The logs were the most important part of the course" and 9 "The logs were not helpful" are significant at the .05 level. Inspection on item 2 indicates that the main difference was between the NO and NON groups and EVAL group. Looking at TABLE 28,

TABLE 28

TYPE OF INSTRUCTOR REACTION TO LOGS AS IT RELATES TO STUDENTS' ATTITUDE REGARDING THE IMPORTANCE OF LOGS

	NO	NON	EVAL	Total
Logs Important	6	8	13	27
Logs Not Important	15	13	6	34
Total	21	21	19	61

*p < .05

Chi-square = 6.9*
Degrees of Freedom = 2

it can be seen that NO and NON students saw the logs as less important on the average than EVAL students. For item 9 as can be seen in TABLE 29 the significant differences were between the NO and NON groups and the EVAL group again.

TABLE 29

TYPE OF INSTRUCTOR REACTION TO LOGS AS IT RELATES TO STUDENTS' ATTITUDE REGARDING HELPFULNESS OF LOGS

	NO	NON	EVAL	Total
Logs Helpful	11	13	18	42
Logs Not Helpful	10	8	1	19
Total	21	21	19	61

*p < .05

Chi-square = 9.1*
Degrees of freedom = 2

The subjects who received positive evaluative comments were significantly more likely to see the logs as helpful and important than those who received NO or NON as can be seen in TABLE 30. The only consistent trend is that EVAL treatment group subjects have a more positive response for 8 of the 10 items than NO treatment group subjects.

Hypothesis IIC: The students' attitudes toward the instructor's response to their logs.

26. The instructor's response on my logs was very helpful. Chi-square = 29.9**.

30. I would like to have had more reactions from the instructor to my logs. Chi-square = 7.9*.

45. The instructor's response to my logs was not very helpful. Chi-square = 17.7**

TABLE 30

PERCENTAGES OF SUBJECTS WHO HAD FAVORABLE ATTITUDES TOWARD LOGS AS METHOD OF LEARNING AS IT RELATES TO TREATMENT GROUP FOR ITEMS 2, 8, 9, 16, 19, 28, 35, 36, 39, AND 44

Treatment Group	Items									
	2	8	9	16	19	28	35	36	39	44
NO	28.6	52.4	52.4	42.9	71.4	66.7	71.4	76.2	66.7	85.7
NON	38.1	66.7	61.9	28.6	76.2	66.7	61.9	47.6	81.0	95.2
EVAL	68.4	73.7	94.7	47.4	78.9	78.9	84.2	73.7	73.7	78.9

47. I would like to have had less of a response from my instructor on my logs. Chi-square = 2.6.

53. Were the comments helpful? Chi-square = 11.5.

54. Would you have preferred to not have the teacher comment on your logs? Chi-square = 3.9.

$^{**}p < .01$

$^{*}p < .05$

APPENDIX IV TABLES 26, 30, 45, 47, 51 (item 53), and 52 (item 54).

Three of the six items that comprise hypothesis IIC yielded significant chi-squares when crossed with treatment group. Items 26 and 45 which are reversals of each other, both yielded chi-squares significant at the .01 level and item 30 was significant at the .05 level. Items 53 and 54 both have missing data making them hard to interpret meaningfully and item 47 shows no clear trend. It can be concluded from examining TABLES 31, 32, and 33 that significantly more students who received NON and EVAL comments than students who received NO comments had a positive attitude toward the helpfulness of the instructor's response. Also, not surprisingly, those students who received NO comment were significantly more likely to desire more reactions from the instructor. The indication in TABLE 32 that 41 out of 61 subjects wanted more reactions may be misleading. Since there was no response to indicate satisfaction with the amount of reactions received subjects were forced to either agree or disagree with item 30 "I would like to have had more reaction from the instructor to my logs."

TABLE 31

TYPE OF INSTRUCTOR REACTION TO LOGS AS IT RELATES TO STUDENTS' ATTITUDE REGARDING INSTRUCTOR'S RESPONSE TO HIS LOGS

	NO	NON	EVAL	Total
Response Helpful	2	19	14	35
Response not Helpful	18	2	5	25
Total	20	21	19	60

**p < .01

Chi-square = 29.9**
Degrees of freedom = 2

TABLE 32

TYPE OF INSTRUCTOR REACTION TO LOGS AS IT RELATES TO STUDENTS' ATTITUDE REGARDING THE INSTRUCTOR'S REACTIONS

	NO	NON	EVAL	Total
More Reactions	19	12	10	41
Not More Reactions	2	9	9	20
Total	21	21	19	61

*p < .05

Chi-square = 7.9*
Degrees of freedom = 2

TABLE 33

TYPE OF INSTRUCTOR REACTION TO LOGS AS IT RELATES TO STUDENTS' ATTITUDE REGARDING HELPFULNESS OF INSTRUCTOR'S RESPONSE TO HIS LOGS

	NO	NON	EVAL	Total
Response Helpful	5	18	14	37
Response Not Helpful	15	3	5	23
Total	20	21	19	60

$^{**}p < .01$

Chi-square = 17.7**
Degrees of freedom = 2

Hypothesis IID: The students' attitudes toward having their logs returned by the instructor.

24. I disliked the thought of getting my logs back. Chi-square = 1.1.

31. I am quite nervous when the logs are being returned. Chi-square = .8.

37. I always looked forward to getting my logs back from the instructor. Chi-square = 3.9.

APPENDIX IV TABLES 24, 31, and 37.

It is interesting to note in TABLE 34 that for all three items there is at least a slight tendency for NON group subjects to respond more favorably than NO or EVAL,

TABLE 34

PERCENT OF FAVORABLE ATTITUDES TOWARD RETURN OF LOGS FOR ITEMS 24, 31, AND 37

Treatment Group	Item		
	24	31	37
NO	85.7	81.0	47.6
NON	90.5	90.5	76.2
EVAL	78.9	84.2	68.4

indicating that NON comments may have caused the returned logs to be more favorably received by some to the subjects. It is possible that less strongly worded items in place of 24 and 31 such as "I am slightly uncomfortable . . ." would have yielded clearer trends.

Hypothesis IIE: The students' attitudes toward engaging in new experiences (risk taking).

3. I would rather keep to safe and familiar things as opposed to new and different things even if it means making less of a gain. Chi-square = 3.7.

21. I would rather do something new and different than the same old thing even if I might be risking failure. Chi-square = .3.

APPENDIX IV TABLES 3 and 21.

No significant differences were obtained. Item 3

shows a slight trend for EVAL subjects to have a more favorable attitude toward 'safe things' (26.3%) than NON (14.3%) and for NON subjects to have a more favorable attitude than NO (4.8%). The lack of significance on this dimension is probably due to the very distant relationship that would be likely to exist between attitudes toward risk taking and the effects of a teacher's comments.

Hypothesis IIF: The students' attitudes toward the course.

14. I enjoy P280 very much. Chi-square = 6.9.

42. I have not liked P280 very much so far. Chi-square = 2.9.

APPENDIX IV TABLES 14 and 42.

The chi-square between treatment group and Item 14 was significant but the chi-square assumption that less than one-fifth or more of the expected frequencies should not be less than 5 was violated. Though both items show slight trends it should be noted that most responses for both indicated liking of the course and a response distribution was only obtained by using an uneven split in grouping (see APPENDIX II) making it difficult to meaningfully interpret the trends. Apparently attitudes toward the course were mainly determined by events other than the log treatment. It is possible that less extreme wording of the items would have resulted in a more even distribution of responses which would have aided analysis and interpretation.

Hypothesis IIG: The students' attitudes toward being part of an experiment.

33. I didn't like the instructor's use of the reaction logs as part of an experiment. Chi-square = 1.6.

48. I was pleased to be part of an experiment. Chi-square = 1.1.

APPENDIX IV TABLES 33 and 48.

No significant differences were obtained. There is a very slight trend on item 33, not replicated in item 48, for more subjects (6) in the NO group to dislike using reaction logs in an experiment than subjects (3) in the NON and EVAL groups. Possibly if one of the treatments had been experienced as more unpleasant these items would have achieved significance.

Hypothesis II I: The students' values regarding student-teacher closeness versus distance.

7. Students should think of the instructor as one of them. Chi-square = .2.

23. Good teachers have the respect of their students. Chi-square = 4.2.

29. Good discipline is more important than the students liking the instructor. Chi-square = 3.1.

34. A teacher should be respected by his students. Chi-square = 2.3.

43. It is important for a teacher to be liked by his students. Chi-square = .2.

APPENDIX IV TABLES 7, 23, 29, 34, and 43.

No significant differences were obtained. There was a trend in item 29 for a greater number of subjects in the EVAL treatment group (36.8%) to value good discipline over students liking the instructor than there is in the NON (14.3%) and NO (19%) treatment groups.

It is possible that some students in the EVAL group saw EVAL comments as an attempt on the part of the instructor to be liked since only positive comments were used and these students may have been unhappy with this perceived behavior on the part of the instructor feeling that 'good discipline' would be more important.

Hypothesis IV: The students' reading of the instructor's reactions.

52. Did you read the comments on your logs? Chi-square = 41.0.

APPENDIX IV TABLE 50.

Although a chi-square significant at the .01 level was obtained two chi-square assumptions were violated causing it to be invalid. People in the NO comment group were instructed not to answer this item making comparisons of treatment groups meaningless.

Hypothesis V: Observed changes in the length of the logs.

The measured length of the last log for each subject.

APPENDIX IV TABLE 55.

Although the chi-square was not significant there

was a slight trend detected. 47.6 per cent of the NO group subjects has a last log of less than 320 words, whereas the percentage for NON was 57.1 and for EVAL was 68.4. This trend could be due to the reinforcing effects of comments. Additional discussion of treatment effects on log length are presented below.

Hypothesis VI: The students' efforts to change the content of the logs.

51. Did you attempt to change the content of your logs in the hope that I would respond or respond differently to them. Chi-square = .3.

APPENDIX IV TABLE 49.

A significant chi-square was not obtained for the cross between treatment group and item 51, nor were there any trends. Only five of the subjects said that they attempted to change their logs in hopes of altering the instructor's response. It is possible that the employment of a negative comment treatment group would have resulted in more students changing their logs. It is possible that students were resistant to admitting that they changed their logs or were unaware that they had done so.

Hypothesis VII: The amount of reading students completed for the course.

Final Reading Questionnaire. Chi-square = 2.5.

APPENDIX IV TABLE 56.

Although there was not a significant chi-square for this item there was a slight effect on reading due to comments. In the NO group 61 per cent of the subjects scored 'read a lot', in NON group it was 47.6 per cent and EVAL group it was 36.8 per cent. It seems that receiving comments of either kind as compared to no comments may result in less reading done for the course. If this finding were to achieve significance with a larger sample it would certainly call for additional exploration.

Hypothesis VIII: The amount of time students estimated that they spent working on their logs.

55. About how much time did you spend per week writing your logs? Chi-square = .6.

56. Did the amount of time tend to increase or decrease as the semester wore on? Chi-square = 1.2.

APPENDIX IV TABLES 53 and 54.

No significant differences were obtained for crosses between these items and treatment group. No discussion of trends will be done because approximately half of the NO group subjects failed to respond to these items due to a misinterpretation of instructions--they skipped more items than they were instructed to skip on the last page of the "Final Questionnaire".

Of a total of fifty-five chi-squares attempted 3 were significant at the .05 level and 2 at .01 level. Almost three chi-squares significant at .05 level would be expected by chance alone. This experimenter believes that one reason

for so few significant results is the relatively small sample size. There is an indication in the Descriptive Data Analysis (page 105) that for most of the items containing whe word "logs" students who received comments (EVAL and NON) had more favorable attitudes toward the logs than those who did not receive comments.

Now the experimenter will move into the naughty land of post hoc research and discuss the results of analysis that were done "just for the heck of it" or curiosity.

In one of these, length of the first logs was crossed with length of the last log and, lo and behold, (TABLE 35)

TABLE 35

LENGTH OF LAST LOG AS IT RELATES TO LENGTH OF FIRST LOG

		Last Log: Short	Last Log: Long	Total
First Log	Short	26	7	33
	Long	9	19	28
	Total	35	26	61

**$p < .05$

Chi-square = 11.6**

Degrees of freedom = 1

people who were writing longer logs at the beginning of the experiment were significantly more likely to be writing longer logs at the end of the study.

There were several interesting relationships with the two self Perception of Writing Ability scores. In one, those who saw themselves as good writers (64) were more likely to see logs as important to the course than those who saw themselves as poor writers.

TABLE 36

SELF PERCEPTION OF WRITING ABILITY (3) AS IT RELATES TO STUDENTS' ATTITUDES REGARDING IMPORTANCE OF LOGS

		Logs: Not Important	Logs: Important	Total
Self	Poor Writer	10	17	27
	Good Writer	24	10	34
	Total	34	27	61

*p < .05

Chi-square = 5.6*
Degrees of freedom = 1

In another relationship both measures of "Self Perception of Writing Ability" were significant when crossed with Item 45, "The Instructor's response to my logs was not helpful."

TABLE 37

SELF PERCEPTION OF WRITING ABILITY (1,2) AS IT RELATES TO STUDENTS' ATTITUDES REGARDING THE HELPFULNESS OF INSTRUCTOR'S RESPONSE TO LOGS

		Instructor's Response: Helpful	Not Helpful	Total
Writing Perception	Good	19	4	23
	Poor	18	19	37
	Total	37	23	60

*p < .05

Chi-square = t.6*
Degrees of freedom = 1

TABLE 38

SELF PERCEPTION OF WRITING ABILITY (3) AS IT RELATES TO STUDENTS' ATTITUDES REGARDING THE HELPFULNESS OF INSTRUCTOR'S RESPONSE TO LOGS

		Instructor's Response: Helpful	Not Helpful	Total
Writing Perception	Poor	22	5	27
	Good	15	18	33
	Total	37	23	60

**p < .01

Chi-square = 6.7**
Degrees of freedom = 1

People who saw themselves as poor writers tended to see the instructor's response as helpful much more often than people who saw themselves as good writers. The experimenter interprets this as the students being very pleased for a change that they didn't get all the red marks and criticism that told them they were not good writers. Those who saw themselves as poor writers interpreted any response as helping them while students who regarded themselves as good writers did not feel the need of an instructor's help.

Finally it was found that when Grade Point Average was crossed with 9 "The logs were not helpful," those with high grade points were much more likely to see the logs as helpful than those with low grade points. (TABLE 39)

TABLE 39

GRADE POINT AVERAGE AS IT RELATES TO STUDENTS' ATTITUDES REGARDING THE HELPFULNESS OF LOGS

		Logs: Helpful	Logs: Not Helpful	Total
Grade Point Average	Less Than 2.3	15	13	28
	More Than 2.3	23	5	28
		38	18	56**

Chi-square = 4.0*
Degrees of Freedom = 1

*$p < .05$

**Grade point average was not available for all subjects.

This result could be due to high acquiesence on the part of people with high grade point averages. They might be more likely to tell teachers what they think teachers want to hear. This could help to account for their high grade points.

Log Length

It was hypothesized that treatments would affect the amount of writing done (log length) just as comments had affected the number of rough drafts and rewrites done in Seidman's (1967) study. Alas, no matter how I manipulate the data no significant differences are obtainable from log length measures. First chi-square, then analysis of variance (in which the within squares were greater than the between squares), and finally graphing were attempted. But, one must not give up so easily. As seen in Table 40 there is some trend (admittedly weak) for the evaluative comment group subjects to increase the lengths of their logs more often than the subjects in the other two treatment groups. Possibly with a larger sample size these differences might just begin to approach significance.

Descriptive Data Analysis

Now that the inferential data analysis has been concluded some descriptive analyses of data will be presented.

Comments and Attitude Toward Logs

All of the questions that contain the word "log" or "logs" in the "Final Questionnaire" were examined (items 2, 6,

TABLE 40

INCREASES AND DECREASES IN LOG LENGTH

IN EACH TREATMENT GROUP

Logs	TREATMENT GROUP					
	1. No Comment		2. Non-evaluative		3. Evaluative	
	+	-	+	-	+	-
1-2	6	15	6	14	9	11
2-3	12	9	11	10	11	8
3-4	11	10	11	10	11	9
4-5	11	10	6	15	10	8
1-5	7	14	7	14	10	9

+ = Increase

- = Decrease

Variations in total are due to cases where there were no changes from one log to the next (less than five words).

8, 9, 11, 12, 13, 16, 19, 24, 26, 27, 28, 30, 31, 33, 35, 36, 37, 38, 39, 40, 44, 45, 46, and 47). There were 26 of these items. For each item it was determined whether the item was worded positively or negatively regarding the logs, i.e. 13 I always looked forward to writing my logs. (positive) and 46 I usually dreaded having to write my logs. (negative) Then the chi-square table for each of the selected questions was examined to determine the number of questions for which the students who received comments (EVAL and NON treatment groups) had more favorable attitudes toward the logs and the number of questions for which the students who didn't receive comments (NO treatment group) had more favorable attitudes toward the logs. It was found that for 21 of the 26 questions students who received comments had a more favorable attitude toward the logs than those who did not receive comments. The only questions for which students who did not receive comments had a more favorable attitude toward the logs were 13, 16, 24, and 47.

These data though not strongly supported in the inferential part of this study indicate a general more favorable attitude toward the logs by those students who received comment over those who received none.

Another set of descriptive data that offers some support for the effects of comments on the students is presented below:

Students responses to questions concerning the comments received on their logs.

Five subjects in the NON comment group were asked if questions (many of the comments received by this group were in the form of questions) were felt to be leading, i.e., rather than just an attempt to help them to think about a subject that the teacher had specific objectives as to how they should view an issue. Three of the five subjects said that they felt that the comments were sometimes leading, one said that they were leading, and one said that they were not leading.

Anecdotal statements were collected from some of the students both at the end of the study and in some cases some time later. These statements provide very interesting insights into the students' response to the treatments which disappointingly were in most cases not confirmed in the inferential data analysis.

First, people in the EVAL (praise) comment condition: One woman found that " . . . at first I was elated. Then, as the course progressed, I felt you were only trying to reinforce what you wanted me to think . . . You were fishing for something . . . Your comments communicated approval." One of the men in this treatment said that "I felt there was no constructive criticism only 'Right' or 'I agree' that I was part of an experiment hoax." And another woman stated that "I felt that no matter what I wrote you would agree with and think it was good so therefore I worked less and less on my logs." (underlining added) It almost seems as if praise

without criticism is so rare for these people that they can't believe that they are worthy of praise and believe that it is not honest, a hoax. Or possibly the praising was done in such an unnatural way that it seemed artifical and undeserved causing the reactions quoted above.

People in the NON treatment group said the response caused them to " . . . think a little more about what I'd said and why." and " . . . stop and review what I said to see if I really meant what I said or if I said it the way I meant it." " . . . you wanted me to be sure of my position.", and " . . . make me stop and think." Others thought the comments were questioning them because I didn't agree with them. "Asking me to be more specific." or asking them to state their opinions. And "The response makes me feel as if I didn't elaborate enough on the subject." One person observed that "The comments try to repeat in different words what I had attempted to say . . . summarize my statements." These were the reflective comments I sometimes used with this group. Some people in this condition were caused to stop and think and some felt criticized.

One person in the NO treatment group felt " . . . sort of 'cheated' by not getting any comments from you when I discovered others were getting comments. I really felt I was doing something wrong." And, another felt " . . . pretty frustrated about my writing. I lost enthusiasm for writing my logs. They got to just be something that had to be done,

rather than the joy that it was for, say, the first log where I anticipated some response." (This person did not know that others were receiving comments.) Others said "I didn't think the logs were that significant. I am not sure though if the reason was because I didn't receive any comments or what." (She knew that others were receiving comments.) "Since I didn't receive any comment, I decided to spend less and less time on the log . . . the logs just seemed worthless." Another subject said "I was tempted to put down a bunch of 'garbage' sometimes just to see if you actually read them." And finally one subject said "I felt that since you commented not at all on my logs, they were worthless. In the beginning I wrote good logs (as I felt) but not one word by you was said. Therefore I felt no matter what I said was worthless so I spent less and less time each time. I also felt that when you handed my log back, you were saying within yourself. 'Here's your crummy log back Jim.' I felt bad when you handed the logs back."

It appears that some subjects found each condition at least a little unpleasant, but the comments about the No treatment indicate that some people were deeply hurt by my failure to respond to them.

Observed Changes Over Time in the Students' Logs

Six students from each treatment group for whom the experimenter had copies of all five logs were chosen at random. The logs of each of those students were stapled

together and each of the eighteen sets were given to Helen Lee Ph.D., Assistant Professor of English and English Education at Indiana University Regional Campus at Fort Wayne. She read the logs and noted any observations she had made about changes over time or the lack of change. The criteria she used were quantity, formality-informality, please the teacher, literacy, self-perceptions, and willingness to verbalize self perceptions.

Mrs. Lee observed changes in 3 of the six logs in the No Comment group, 5 in Non-Evaluative, and 2 in Evaluative.

The changes observed in the No Comment group were: growth in verbalization of self-perceptions, increased revelation of self, and increased ability and willingness to react verbally. The changes observed in Non-Evaluative group were more informal, increased verbalization of self-perceptions and feelings (twice), more subjective discussion of feelings, decreasing use of the pronoun I, more relaxed and open--less effective writing. The changes observed in the Evaluative group were: decreasing use of I, increasing subjective and more formal and more vivid (last two on the person's logs).

It may be interesting to compare the results of this with the answers to question 5 part II of the final questionnaire:

4. Did you attempt to change the content of your logs in the hope that I would respond or respond differently to them?

	Yes	No
No Comment	2	19
Non-Evaluative	2	19
Evaluative	1	19

Only five students felt that they had purposely tried to change their logs and were spread relatively evenly between the three groups. Yet in a sample of 18 in this analyses 10 changes were observed.

An entire study devoted to this area would be necessary in order to draw any firm conclusions, but there is some indication that NON may cause more changes than NO and EVAL. It would not be surprising if students in EVAL changed least since they were being heavily reinforced for what they were writing.

"Comments on Comments"

Four people (high school and college instructors) were asked to read many of the logs from each of the two treatment groups separately in which comments had been written on the logs. They were instructed to write down what they felt the comments were communicating to the students. Afterwards I discussed what they had written with them and clarified or added to it, if necessary.

Below are presented the comments they wrote in their entirety.

Evaluative:

1. You don't criticize--too agreeable--seem very pleased with everything they said.

2. Comments are almost entirely showing teacher's approval of points student make. How teacher felt about what student said--almost always, if not always, teacher approved.

3. The first approach was a positive one--perhaps in the interests of opening the student up and urging him to react, not remain passive--to internalize his experience in your class.

4. All comments were affirmative and rewarding. They seemed to offer praise for the good elements and thus reinforcing, with no attempt made to criticize or question responses.

Non-Evaluative:

1. You are asking questions of the students. To help yourself become more knowledgable. Your comments are mostly questions. You like praise of yourself. You like to agree rather than disagree.

Oral comments: Asking leading questions. You seem to be asking questions to learn things about yourself. You like to agree rather than disagree.

2.

1. Pointing out clearly position student takes.

2. Asking question for further consideration.

3. Suggesting books for further study.

First comments were analytical, critical, suggestive--asked student to do something after he got paper back.

Oral comments: Answer not complete--suggesting disapproval. Students haven't done enough.

3. This set of comments tries to provoke further questioning on the part of the student of his own remarks--tries to push him to be more critical--less apt to make general unsupported statements. They were in the interests of helping students to refine their reactions--perhaps re-think and re-act. There was a negative element to them--not all the student said was unqualifiedly (sic) good or right.

> 4. You seem to be genuinely interested in what was written and thus made comments that would lead into further discussion. Most comments seemed favorable. They seemed to offer encouragement to the writer. The comments seemed to tell the writer that he was making good points but that his explanations could be developed somewhat. It seemed as though you were trying to spark the writer on but not necessarily praise him. You were saying again what they had said. Oral comment like the therapist in Dibs did. Did not give the impression of "You idiot, why did you write that."

After reading what they had written and getting clarification on it I told them what I had thought I was doing in each comment group. As can be seen above the readers were in basic agreement with me allowing for minor variation in interpretation with what I believed I was communicating to each comment group. That is, I was communicating what I wanted to communicate. The only exception was that 1 and 4 see the Non-evaluative as approving or favorable and 2 and 3 see them as mildly disapproving or negative.

CHAPTER VI

CONCLUSIONS, LIMITATIONS, AND PROJECTED APPLICATIONS

Conclusions

In this study conducted to assess the effects of teachers written comments on students perceptions, attitudes, values, and behaviors only two out of twenty hypotheses were supported with significant results (see TABLE 41). They were Hypothesis IIB: 'The students' attitudes toward logs as a method of learning' and Hypothesis IIC: 'The students' attitudes toward the instructor's response to their logs. For Hypothesis IIB two out of nine items were significant and for Hypothesis IIC three of six items were significant. In Hypothesis IIB the EVAL subjects had more positive attitudes toward the logs than the NO and NON group subjects. For Hypothesis IIC items 26 and 45 were significant at the .01 level and item 30 was significant at the .05 level. For all three of these items EVAL and NON subjects had more positive attitudes toward the instructor's response than the NO subjects. From this data it can be concluded that the EVAL comment treatment condition was more likely to reinforce positive attitudes on the part of the subjects toward the comments written on the logs. Another way of stating this last finding, which makes it seem less impressive, is that students preferred

TABLE 41

SUMMARY OF RESULTS OF HYPOTHESES

Hypothesis		Results
IA	The students' perceptions of the level of their own learning.	No Significant Differences
IB	The students' perceptions of the instructor's attitude toward the students.	No Significant Differences
IC	The students' perceptions of the quality of their logs.	No Significant Differences
ID	The students' perceptions of the relevance of their logs to other aspects of the course.	No Significant Differences
IE	The students' perceptions of the instructor's evaluation of the students' logs.	No Significant Differences
IF	The students' perceptions of teaching as a career.	No Significant Differences
IG	The students' perceptions of the extent of congruity between themselves and the instructor.	No Significant Differences
IIA	The students' attitudes toward writing their own logs.	No Significant Differences
IIB	The students' attitudes toward logs as a method of learning.	2 out of 10 Items Significant at .05

TABLE 41 (Continued)

Hypothesis		Results
IIC	The students' attitudes toward the instructor's response to their logs.	3 out of 6 Items Significant 1 at .05 and 2 at .01
IID	The students' attitudes toward having their logs returned by the instructor	No Significant Differences
IIE	The students' attitudes toward engaging in new experiences (risk taking).	No Significant Differences
IIF	The students' attitudes toward the course.	No Significant Differences
IIG	The students' attitudes toward being part of an experiment.	No Significant Differences
III	The students' values regarding student-teacher closeness versus distance.	No Significant Differences
IV	The students' reading of the instructor's reaction.	No Significant Differences
V	Observed changes in the length of the logs.	No Significant Differences
VI	The students' efforts to change the content of the logs.	No Significant Differences
VII	The amount of reading students completed for the course.	No Significant Differences
VII	The amount of time students estimated they spent writing their logs.	No Significant Differences

both NON and EVAL comments to not receiving any comments at all. Students apparently found EVAL and NON comments reinforcing (more reinforcing than NO comments), but only the positive attitudes from EVAL comments generalized to the logs.

In looking at these results there appear to be two interpretations possible. One interpretation is that due to small sample size real differences that existed as a result of treatments were not detected. The other interpretation is that no differences existed, i.e., the treatments had no effects. It is not possible to determine which is the more probable interpretation.

The Descriptive Data Analysis (pages 105, 106) provides a slightly different picture. Students who received either EVAL or NON comments were more likely to respond positively to any item that contained the word 'log' or 'logs' than those who received NO comment. Thus, the results are mixed and inconclusive as to whether EVAL comments are more reinforcing than NON comments. The evidence is much stronger than receiving either EVAL or NON comments is more reinforcing than receiving NO comments.

From student reactions to the treatments (see Descriptive Data Analysis pages 107-110) there is anecdotal evidence that some students may be deeply hurt by not receiving any comments. The effects on the students of not receiving any comments may be partially caused by students' perceptions of the instructor's usual way of responding in class. If the instructor is perceived as usually responding to people and responds positively, then not receiving comments might communicate to

the students--'he can't find anything good to say about my paper.' If the instructor is perceived as usually responding negatively in class to students' ideas, then not receiving any comments on a paper might communicate that 'he likes my paper, he can't find anything to criticize.' There is another possible initial effect of not receiving comments which would occur if the students viewed the instructor as usually responding positively. If this were the case the students would be motivated to try harder or do more. This effect would probably disappear after a few more papers if there were still no comments. There is no indication that this effect occurred in this study assuming that the motivation could be measured in terms of increased out-put--longer logs. (See Table 40)

A possible explanation for the lack of comment effects on length is that the application of the hypothesized reinforcer (comments) in both EVAL and NON condition was not consistent. If a subject in either condition wrote a long log or a short log he would still receive comments. In effect, whatever length logs he wrote would have been reinforced. There is some evidence to support this theory. It was found that there was a significant chi-square relationship between the length of the first log and the length of the last log (Table 35). In other words, people tended to continue to write logs of similar length through the duration of the experiment.

Obviously length may have little relation to quality and may not even be an indication of increased motivation. The

number of papers written was used as a criterion of motivation in Seidman's study (1967).

These results are not very robust--a discussion of some of the possible causes, especially small sample size is presented in the Limitations and Implications for Future Research section. Due to the nature of the data collected--ordinal not interval data--the non-parametric chi-square statistic was used. The data could not be subject to a more powerful analysis of variance without seriously violating assumptions. Several of the hypotheses were directed at areas very distant from the lo[illegible] themselves and were not affected by the comment conditions. Many of the items used to test the hypotheses that were closely related to the logs did show trends as indicated below even though they did not achieve significance. The use of stronger treatments such as negative comments might have yielded clearer results. If a teacher wants his students to write longer papers then he must try to find a reinforcer that is effective for length. Possibly the teacher could measure each paper after the first one for each student and attempt to reinforce only the papers of those students who had written longer papers. Similarly if the teacher had a goal other than length such as spelling accuracy he would need to find a reinforcer or reinforcers for the students that would be effective in achieving that goal. It would have been very helpful if this study and the literature review had provided clear guidelines as to which reinforcers are effective for which teacher goals.

Two theoretical explanations for the lack of significant

outcomes in this study are possible. Either all three comment conditions were reinforcing to the students or none of the comment conditions were reinforcing. It is not possible to determine which is the more likely explanation.

Limitations and Implications for Future Research

There are first the obvious effects of small sample size (61 subjects), only two classes, one instructor, one college, and one course in one subject matter area, all limiting the generalizability of this study. It seems that a larger sample alone would very likely have increased the number of significant findings in this study. Many chi-squares were close to being significant and many significant chi-squares were invalidated by low cell frequencies. A larger sample would have also permitted more rigorous analysis of the data with more completed inspection of the effects of subjects' sex, grade point, SAT scores, age etc. on the outcomes. A larger sample size could have enabled the experimenter to manipulate several potentially meaningful variables. In this study subjects were told that they were part of an experiment and that they should not talk to each other concerning their reaction logs nor show each other their logs, though some subjects did catch glances at other logs and noticed comments on them. If many classes and colleges had been used then whole classes could have received the same treatment, some classes could be told and others not told that they were part of an experiment, and some could be instructed to share their papers with each other to see what effects, if any, these experimental manipulations might have on the results.

Having more than one teacher would reduce effects due to the particular personality and teaching style of each teacher. It would even be possible with a sufficiently large number of teachers to examine various teaching styles and teacher personalities as they relate to different treatments.

There may also be different outcomes in a class that is specifically focused on writing--a composition class. The writing in that type of class would almost certainly be graded in some manner. I assume that grading would be likely to greatly change the effects of comments, especially if the grade received were in any way inconsistent with the comments. Encouraging comments paired with poor grades or discouraging or critical comments paired with good grades would be likely to have very different effects.

Another possible limiting effect is that the treatments may not have been powerful enough to yield significant differences. If, for instance, the three treatments had been praise, no comment, and criticism many more significant results might have been achieved. Or, the measuring instruments ("Final Questionnaire") may not have been sensitive enough to detect real differences that might have been caused by treatments. Possibly something like a semantic differential (Osgood, Suci, and Tannenbaum, 1957) with subjects rating "My Logs" and "Others' Logs" or some other more sensitive rating form might have been more successful in detecting significant differences in subjects perceptions, attitudes and values caused by the treatment.

Some related issues which future research in this area may illuminate are: What are the effects of praise with correction? (students being praised and also having their mistakes pointed out to them). What are the effects of a combination of praise and criticism, and different ratios of each? Most important and most difficult to answer are questions on the specific effects of more narrowly defined types of comments. It was indicated in the Page study (1958) that the 'free' content related comments are more effective in raising achievement than either specified comments or grades, but what are the effects of specific types of content related comments--those that globally praise ('good idea') versus those that communicate exactly what is good and why it is good? Are comments that praise and also describe how something could be still better more effective than praise without suggestions?

Another area that needs to be explored is that of the effects of the unreliability of teacher ratings of student written work documented in Chapter II. What are the effects on students of receiving A's and B's in one course on their written papers and C's and D's in another course for essentially the same quality of work? Or the effects of one teacher criticizing content and another grammer and punctuation and a third criticizing both. This inconsistency may have some relation to the negative attitude toward writing that many students acquire--it certainly needs to be investigated.

In conclusion, if we as teachers want students to view writing as a positive and enriching learning experience, then we need to know as much as possible concerning the effects of our comments on students.

Projected Applications of the Research Data on Teacher Comments

Page (1958A) concluded that 'Free Comments' on examinations raised achievement more on the next examinations than did 'Specified Comment' or no comments at all. Sweet's study (1966) indicated that specified comments and no comment did not change student attitudes toward English significantly, but that 'free' comments (personal comments) did change the student attitudes in a positive direction. Taylor and Hoedt (1966) found priase without correction increased positive attitudes toward students papers relative to blame. Seidman (1967) found that students preferred selective, supportive comments to no comments or negative comments and that selective supportive comments resulted in more papers written (greater motivation) as compared with no comment or negative comments. The present study does not provide conclusive evidence that EVAL or NON comments effected the students' perceptions, attitudes, values, or behaviors in this study any differently than not receiving any comments at all.

This study and the others reviewed fall far short of providing clear guidelines for teachers concerning the effects of their comments on students. There are some questions that need to be answered (directions provided) in order to help

teachers comment effectively. Some of these questions are: How might a particular comment effect a student's achievement? How would it effect his attitudes toward the paper he wrote, the test he took, himself as a person, and the course he is taking? What effects would a particular comment have on his future motivation and work output? In answering these questions, it must be remembered that in the end the decision on how to comment rests with the individual teacher.

There was no research discovered which supported the effectiveness of negative, critical comments. In fact, research indicates that positive comments may be more effective in raising achievement, increasing motivation and improving attitudes than negative, critical comments. Therefore, on the basis of prior research, it seems that teachers would want to use more positive comments and less negative ones in order to be most effective in helping their students.

APPENDIX I

INSTRUMENTS AND SCORING

A. "The Type of Teacher-Student Relationship I Prefer"

B. "My Reading Habits"

C. "Questionnaire" (Achievement Motivation)

D. "Teacher Scale"

E. "Self Perception of Writing Ability"

F. "How Do You View Yourself"

G. "Reading Questionnaire"

H. "Final Questionnaire"

Name_____ Paul Berghoff

The Type of Teacher-Student Relaionship I Prefer

Below is a series of opposite adjectives. Between each pair of adjectives are several spaces. Please respond to each pair of opposites by placing a check (x) in that space that best describes the type of teacher-student relationship you prefer. Please try not to skip any. Thank you.

Formal	1. : 2. : 3. : 4. : 5. : 6. : 7.	Informal
Warm	7. : 6. : 5. : 4. : 3. : 2. : 1.	Cold
Unsociable	1. : 2. : 3. : 4. : 5. : 6. : 7.	Sociable
Indifferent	1. : 2. : 3. : 4. : 5. : 6. : 7.	Eager
He always desires to help	7. : 6. : 5. : 4. : 3. : 2. : 1.	He is available
Personal	7. : 6. : 5. : 4. : 3. : 2. : 1.	Impersonal
Distant	1. : 2. : 3. : 4. : 5. : 6. : 7.	Close
Leader-Follower	1. : 2. : 3. : 4. : 5. : 6. : 7.	Co-worker
I talk	7. : 6. : 5. : 4. : 3. : 2. : 1.	I listen

Name _____

Paul Berghoff
January, 1970

MY READING HABITS

Check the statement below that most applies to you:

___1. I usually read everything that is required and just about everything else I can find that is related to a course.

___2. I usually read just a little more that what is required of me.

___3. I usually read just what is required of me in a course.

___4. I usually try to read as little as I have to.

___5. I usually do not do any of the reading for a course.

QUESTIONNAIRE

(Achievement Motivation)

For the following set of questions use this scale to indicate the extent to which you agree with the statement.

I DISAGREE VERY MUCH	I DISAGREE IN GENERAL	I DISAGREE A LITTLE	I AGREE A LITTLE	I AGREE IN GENERAL	I AGREE VERY MUCH
1	2	3	4	5	6

1. When I know there are going to be one or two questions on an exam from outside reading assignments, I always read <u>all</u> the materials. _____

2. I regard myself as a more consistent and harder worker in my classroom assignments than the typical student in my classes. _____

3. Others (not my good friends) think of me as one who has "missed some of the fun" because I was so serious. _____

4. I think my fellow students think of me as a hard worker. _____

5. Most of my teachers probably think of me as one of their hardest workers. _____

6. Other interests (sports, extra-curricular activities, or hobbies) prevent me from obtaining an excellent rating or mark for <u>effort</u> in school work. This item reversed in scoring. _____

7. I have a very strong desire to excel academically. _____

8. I try harder to get on the school honor roll or merit list than the average student in my class. _____

9. I try to do most jobs at least a little better than what I think is expected. _____

D

TEACHER SCALE

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
   b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
    b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
    b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

TEACHER SCALE (Continued)

14. a. There are certain people who are just no good.
    b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
    b. Many times we must just as well decide what to do by flipping a coin.
16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
    b. By taking an active part in political and social affairs the people can control world events.
18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    b. There really is no such thing as "luck".
19. a. One should always be willing to admit mistakes.
    b. It is usually best to cover up one's mistakes.
20. a. It is hard to know whether or not a person really likes you.
    b. How many friends you have depends on how nice a person you are.
21. a. In the long run the bad things that happen to us are balanced by the good ones.
    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort we can wipe out political corruption.
    b. It is difficult for people to have much control over the things politicians do in office.
23. a. Sometimes I can't understand how teachers arrive at the grades they give.
    b. There is a direct connection between how hard I study and the grades I get.
24. a. A good leader expects people to decide for themselves what they should do.
    b. A good leader makes it clear to everybody what their jobs are.
25. a. Many times I feel that I have little influence over the things that happen to me.
    b. It is impossible for me to believe that chance or luck plays an important role in my life.
26. a. People are lonely because they don't try to be friendly.
    b. There's not much use in trying too hard to please people, if they like you, they like you.
27. a. There is too much emphasis on athletics in high school.
    b. Team sports are an excellent way to build character.

TEACHER SCALE (Continued)

28. a. What happens to me is my own doing.
    b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the way they do.
    b. In the long run the people are responsible for bad government on a national as well as on a local level.

Note: Score is the total number of underlined choices (i.e., external items endorsed).

Name _____ Paul Berghoff

Self Perception of Writing Ability

1. Check the statement that comes closest to descriging you:

7. a. I write very well.
6. b. I am a fairly good writer.
5. c. I'm just a bit better than average.
4. d. I'm an average writer.
3. e. I'm just a bit below average.
2. f. I'm a fairly poor writer.
1. g. I write very poorly.

2. Enjoyment of writing.

7. a. I love to write.
6. b. I enjoy writing.
5. c. I kind of like to write.
4. d. I neither like nor dislike writing.
3. e. I don't especially like to write.
2. f. I don't like to write at all.
1. g. I hate to write.

3. Below is a series of opposite adjectives. Between each pair of adjectives are several spaces. Please respond to each pair of opposites by placing a check (x) in that space that best describes you as a writer. Please try not to skip any. Thank you.

good	7. : 6. : 5. : 4. : 3. : 2. : 1.	bad
shallow	1. : 2. : 3. : 4. : 5. : 6. : 7.	deep
fast	7. : 6. : 5. : 4. : 3. : 2. : 1.	slow
unclear	1. : 2. : 3. : 4. : 5. : 6. : 7.	clear
fresh	7. : 6. : 5. : 4. : 3. : 2. : 1	stale
easy	7. : 6. : 5. : 4. : 3. : 2. : 1	hard
static	1. : 2. : 3. : 4. : 5. : 6. : 7.	dynamic
interesting	7. : 6. : 5. : 4. : 3. : 2. : 1	uninteresting

F

HOW DO YOU VIEW YOURSELF?

Below is a series of opposite adjectives. Between each pair of adjectives are several spaces. Please respond to each pair of opposites by placing a check (x) in that space that best describes you as you see yourself. Please try not to skip any. Thank your.

* *

active	7 : 6 : 5 : 4 : 3 : 2 : 1	passive
dull	1 : 2 : 3 : 4 : 5 : 6 : 7	bright
strong	7 : 6 : 5 : 4 : 3 : 2 : 1	weak
closed	1 : 2 : 3 : 4 : 5 : 6 : 7	open
warm	7 : 6 : 5 : 4 : 3 : 2 : 1	cold
sour	1 : 2 : 3 : 4 : 5 : 6 : 7	sweet
stale	1 : 2 : 3 : 4 : 5 : 6 : 7	fresh
clear	7 : 6 : 5 : 4 : 3 : 2 : 1	hazy
unattractive	1 : 2 : 3 : 4 : 5 : 6 : 7	attractive
interesting	7 : 6 : 5 : 4 : 3 : 2 : 1	uninteresting
uninviting	1 : 2 : 3 : 4 : 5 : 6 : 7	inviting
static	1 : 2 : 3 : 4 : 5 : 6 : 7	dynamic
good	7 : 6 : 5 : 4 : 3 : 2 : 1	bad
pessimistic	1 : 2 : 3 : 4 : 5 : 6 : 7	optimistic
successful	7 : 6 : 5 : 4 : 3 : 2 : 1	unsuccessful
pleasant	7 : 6 : 5 : 4 : 3 : 2 : 1	unpleasant
agitated	1 : 2 : 3 : 4 : 5 : 6 : 7	calm
deep	7 : 6 : 5 : 4 : 3 : 2 : 1	shallow
sincere	7 : 6 : 5 : 4 : 3 : 2 : 1	insincere
cooperative	7 : 6 : 5 : 4 : 3 : 2 : 1	competitive

Paul Berghoff
April 1970

READING QUESTIONNAIRE

How much reading in the areas listed below have you done for this course?

I. Books:

A. Please indicate how many of the books you read were obtained in the following way:

Omitted
_____1. Passed around in class or borrowed from a friend or classmate.
_____2. At a library.
_____3. Bought at a bookstore.
_____4. Had around the house.

B. Please list the titles of some of the books you read.

1. Omitted from scoring
2. _____
3. _____
4. _____

C. How many books have you read so far? Number multiplied by 2.

D. How did you read most of the books? (Check one).

5. 1. Read most books completely and carefully.
4. 2. Read a good portion of most books.
3. 3. Read about half of most books.
2. 4. Just read a few important parts of most books.
1. 5. Just skimmed parts of most of the books.

II. Handouts (check one):

7. 1. Read all of them very carefully.
6. 2. Read most of them or parts of all of them.
5. 3. Read a good portion of them.
4. 4. Read about half of them.
3. 5. Read a few of them.
2. 6. Hardly any.
1. 7. Didn't read any of them.

III. Newspapers, magazine articles, and pamphlets (check one):

7. 1. Just about everything I could find.
6. 2. Very many.
5. 3. Many.
4. 4. About an average amount.
3. 5. A few.
2. 6. Very few.
1. 7. None.

How did you read them?

4. 1. Read most of them completely.
3. 2. Read some completely, skimmed some or just read parts of some.
2. 3. Mainly just skimmed or read part.
1. 4. Read just a few sentences most of the time.

H

Paul Berghoff
April, 1970

FINAL QUESTIONNAIRE

Name_____

Age_____

Year in School_____

Married ____ Single ____

Do you work while you are going to school? Yes ___ No___

If yes, approximate number of hours per week _____.

For the following items use this scale to indicate the extent to which you agree or disagree with each statement.

I DISAGREE VERY MUCH	I DISAGREE IN GENERAL	I DISAGREE A LITTLE	I AGREE A LITTLE	I AGREE IN GENERAL	I AGREE VERY MUCH
(1)	(2)	(3)	(4)	(5)	(6)

1. ___ The instructor and I shared many of the same attitudes.
2. ___ The logs were the most important part of the course.
3. ___ I would rather keep to safe and familiar things as opposed to new and different things even if it means making less of a gain.
4. ___ I don't believe that the instructor cares whether I learn anything or not in here.
5. ___ I feel that I really have gotten a lot out of P280 so far.
6. ___ The instructor didn't seem to like my logs.
7. ___ Students should think of the instructor as one of them.
8. ___ I hope we can continue to use logs for the rest of the semester.
9. ___ The logs were not helpful.
10. ___ I don't think that I will like being a teacher.

11. ___ The instructor seemed to be very pleased with my logs.

12. ___ I thought the logs seemed unrelated to the rest of the course.

13. ___ I always looked forward to writing my logs.

14. ___ I enjoy P280 very much.

15. ___ The instructor and I do not agree most of the time on educational issues.

16. ___ The logs motivated me to read more than I might have without them.

17. ___ Teaching is hard work.

18. ___ I think I am getting less out of this course than the rest of my classes.

19. ___ I would never want to use logs in my own teaching.

20. ___ I think that the instructor cares a great deal about me as an individual.

21. ___ I would rather do something new and different than the same old thing even if I might be risking failure.

22. ___ I didn't learn very much at all in this class so far.

23. ___ Good teachers have the respect of their students.

24. ___ I disliked the thought of getting my logs back.

25. ___ I think I am getting much more out of this course than most of my fellow students.

26. ___ The instructor's response on my logs was very helpful.

27. ___ I think my logs are much better than those of my classmates.

28. ___ If I never write another reaction log it will be too soon.

29. ___ Good discipline is more important than the students liking the instructor.

30. ___ I would like to have had more reactions from the instructor to my logs.

31. ___ I am quite nervous when the logs are being returned.

32. ___ Teaching has many rewards.

33. ___ I didn't like the instructor's use of the reaction logs as part of an experiment.

34. ___ A teacher should be respected by his students.

35. ___ The logs helped me to put together and understand what I read and experienced.

36. ___ I would very much like to use logs when I teach.

37. ___ I always looked forward to getting my logs back from the instructor.

38. ___ I think my logs are much worse than those of the other students in this class.

39. ___ The logs were not an important part of this course.

40. ___ The logs were very relevant to the rest of the course.

41. ___ I'm sure that I will really like being a teacher.

42. ___ I have not liked P280 very much so far.

43. ___ It is important for a teacher to be liked by his students.

44. ___ The logs seemed to discourage me from reading.

45. ___ The instructor's response to my logs was not very helpful.

46. ___ I usually dreaded having to write my logs.

47. ___ I would like to have had less of a response from my instructor on my logs.

48. ___ I was pleased to be part of an experiment.

Paul J. Berghoff
April, 1970

QUESTIONS

49. 1. Did you talk to other students about the reaction logs? Yes 1. No 2.

49A. 2. What did you learn from them?

50. 3. Did you see anyone else's paper? Yes 1. No 2.

50A. 4. What did you notice if anything?

51. 5. Did you attempt to change the content of your logs in the hope that I would respond or respond differently to them? Yes 1. No 2.

51A. 6. How did you change the content?

Answer questions 7 - 9 only if there were comments on your logs:

52. 7. Did you read the comments on your logs? Yes 1. No 2.

53. 8. Were the comments helpful? Yes 1. No 2.

54. 9. Would you have preferred to not have the teacher comment on your logs? Yes 1. No 2.

55. 10. About how much time did you spend per week writing your logs?_____. Rounded off to nearest hour.

56. 11. Did the amount of time tend to increase or decrease as the semester wore on? Increase 1. Decrease 2.

APPENDIX II

INTERVAL ASSIGNMENTS FOR EACH VARIABLE

Categories were combined or re-grouped in some cases to meet the requirements for use of the chi-square contingency coefficient. The chi-square test may be used if all expected frequencies are 1 or more and if fewer than 20 per cent of the cells have an expected frequency of less than 5. (Siege, 1956, p. 110) The re-grouping may be examined below where the intervals assigned each variable are given. For items 1 through 48 the usual grouping is 1 - 3 and 4 - 6, but where the distribution of answers were highly skewed the grouping was changed to 1 - 2 and 3 - 6 or 1 - 4 and 5 - 6 depending on the direction of skewness in order to meet the chi-square specifications. All other variables were grouped so that as close as possible to half of the subjects fell into one group and half in the other, i. e. highs and lows.

INTERVAL GROUPING

1. (1-4), (5-6)
2. (1-3), (4-6)
3. (1-3), (4-6)
4. (1), (2-6)
5. (1-4), (5-6)
6. (1-3), (4-6)
7. (1-3), (4-6)
8. (1-3), (4-6)
9. (1-3), (4-6)
10. (1-3), (4-6)
11. (1-3), (4-6)
12. (1-3), (4-6)
13. (1-3), (4-6)
14. (1-4), (5-6)
15. (1-4), (5-6)
16. (1-3), (4-6)
17. (1-3), (4-6)
18. (1-3), (4-6)
19. (1-3), (4-6)
20. (1-3), (4-6)
21. (1-3), (4-6)
22. (1-2), (3-6)
23. (1-4), (5-6)
24. (1-2), (3-6)
25. (1-3), (4-6)
26. (1-3), (4-6)
27. (1-3), (4-6)
28. (1-3), (4-6)
29. (1-3), (4-6)
30. (1-3), (4-6)
31. (1-2), (3-6)
32. (1-4), (5-6)
33. (1-3), (4-6)
34. (1-3), (4-6)
35. (1-3), (4-6)
36. (1-3), (4-6)
37. (1-3), (4-6)
38. (1-3), (4-6)
39. (1-3), (4-6)
40. (1-3), (4-6)
41. (1-3), (4-6)
42. (1-2), (3-6)
43. (1-4), (5-6)
44. (1-2), (3-6)
45. (1-3), (4-6)
46. (1-3), (4-6)
47. (1-2), (3-6)
48. (1-3). (4-6)
49. (1), (2)
50. (1), (2)

INTERVAL GROUPING (Continued)

51. (1), (2)
52. (1), (2)
53. (1), (2)
54. (1), (2)
55. (1), (2-3)
56. (1), (2)
57. (01-15), (16-42)
58. (001-350), (351-1700)
59. (001-320), (321-1200)
60. (1-24), (25-50)
61. (1), (2), (3)
62. (01-52), (53-65)
63. (01-09), (10-15)
64. (01-34), (35-50)
65. (01-35), (36-55)
66. (1-2), (3-5)
67. (001-101), (102-140)
68. (01-10), (11-20)
69. (17-20), (21-50)
70. (1-2), (3-5)
71. (1), (2)
72. (1), (2)
73. (00-19), (20-50)
74. (300-450), (451-600)
75. (200-525), (526-700)
76. (1000-2299), (2300-4000)

APPENDIX III

COMPUTER PROGRAMS

A. Fortaran Programs Written by Gordon D. Wakefield

B. Chi-Square Assumptions

C. Correlation with Item Deletion BMD03D

D. Coding Instructions and Item Numbers

A

FORTRAN PROGRAMS WRITTEN BY GORDON D. WAKEFIELD

FREQ 7.1-R — A generalized frequency and percentage distribution program. It will handle up to 250 variables and will accomodate multiple-response variables. It will generate any number of 2-way and 3-way cross-classification tables, will compute means, standard deviations, probable errors for the percentages, and incorporates the statistical tests described in routines CLTEST and TSTEST described elsewhere in this listing. It possesses extensive data editing, sequence checking, and control card error checking features. (Approximately 2200 cards.)

RECODE — A generalized data conversion (RECODing) program designed for use with a generalized frequency and percentage distribution program. This program will code continuous numeric data into classes. In addition, it will recode "classification code data". As an example of the latter, the program

CLTEST — A routine which computes three measures of statistical association for contingency tables. These three measures are: the contingency Chi-Square, the contingency coefficient, and the Lambda coefficient. (The last of these is described in The Journal of The American Statistical Association, Vol. 49, 1954, pp. 732-764). In addition, this routine performs significance tests for the contingency Chi Squares and computes, where possible, the approximate .95 probable error for Lambda.

B

CHI-SQUARE ASSUMPTIONS

When to Use the x^2 Test

As we have already noted, the x^2 test requires that the expected frequencies (E_{ij}) in each cell should not be too small. When they are smaller than minimal, the test may not be properly or meaningfully used. Cochran (1954) makes these recommendations:

The 2 x 2 case. If the frequencies are in a 2 x 2 contingency table, the decision concerning the use of x^2 should be guided by these considerations:

1. When $N > 40$, use x^2 corrected for continuity, i.e., use formula (6.4).

2. When N is between 20 and 40, the x^2 test (formula (6.4))may be used if all expected frequencies are 5 or more. If the smallest expected frequency is less than 5, use the Fisher test (pages 94 to 104).

3. When $N < 20$, use the Fisher test in all cases.

Contingency tables with df larger than 1. When k is larger than 2 (and thus $df > 1$), the x^2 test may be used if fewer than 20 percent of the cells have an expected frequency of less than 5 and if no cell has an expected frequency of less than 1. If these requirements are not met by the data in the form in which they were originally collected, the researcher must combine adjacent categories in order to increase the expected frequencies in the various cells. Only after he has combined categories to meet the above requirements may he meaningfully apply the x^2 test.

When $df > 1$, x^2 tests are insensitive to the effects of order, and thus when a hypothesis takes order into account, x^2 may not be the best test. The reader may consult Cochran (1954) for methods that strengthen the common x^2 tests when H_o is tested against specific alternatives. (Siegel, 1956, p. 110)

C

CORRELATION WITH ITEM DELETION BMD03D

1. Program Name: BMD3D

2. Central Memory (CM): 76000

3. General Description

   a. This program computes a simple correlation matrix, omitting values of variables that the user specifies to be deleted. Blanks as well as other codes may be specified for deletion, e.g., to indicate missing values.

   b. Output for this program includes:

      1) Correlation matrix printed-punch cards or BCD tape output is optional.

      2) Number of pairs of observations used in computing each correlation coefficient.

   c. Limitations per problem:

      1) p, number of variables ($2 \leq p \leq 80$)
      2) n, number of cases ($2 \leq n \leq 99,999$)
      3) c, number of deletion codes (for each variable) ($0 \leq c \leq 10$)
      4) k, number of Variable Format Cards ($1 \leq k \leq 10$)
      5) d, number of Deletion Code Cards ($0 \leq d \leq 80$)
      6) m, number of Transgeneration Cards ($0 \leq m \leq 99$)

   d. This program allows transgeneration of the input data. Codes 01-14 of the transgeneration list may be used.

4. Order of Cards

   Cards indicated by letters enclosed in parentheses are optional. All other cards must be included in the order shown.

a.	Job Card	[GO STATPRF, IV-A]
(b.)	REQUEST Card(s)	[GO STATPRF, IV-B]
c.	LIBCOPY Card	[GO STATPRF, IV-C]
d.	LGO Card	[GO STATPRF, IV-D]
e.	7-8-9 Card (multiple-punched in column 1)	
f.	Problem Card	
(g.)	Deletion Code Card(s)	
(h.)	Standard Transgeneration Card(s)	[GO STATPRF, III-B]
i.	F-type Variable Format Card(s)	[GO STATPRF, III-C]

CORRELATION WITH ITEM DELETION BMD03D (Continued)

(j.) Data Input Cards [GO STATPRF, II-C]
(Place data input deck here if data input is from cards)

(k.) F-type Variable Format Card for punched cards or BCD tape output (1 card only) [GO STATPRF, III-D]

. . .

Repeat f. through (k.) as desired.

. . .

l. Finish Card [GO STATPRF, III-E]

m. 6-7-8-9 Card (multiple-punched in column 1)

5. Preparation of Cards Specific for This Program

F. Problem Card

Col.	
1-6	PROBLM
7-12	Alphanumeric problem name
13-14	Number of variables ($2 \leq p \leq 80$)
15-19	Number of cases ($2 \leq n \leq 99999$)
20-21	Number of Deletion Code Cards; if none leave blank. ($0 \leq d \leq 80$)
22-23	Number of Transgeneration Cards ($0 \leq m \leq 99$)
24-26	Number of variables added in transgeneration ($-78 \leq q \leq 78$)
27-28	00 Correlation matrix printed only 09 Correlation matrix printed and written on logical tape unit 9 -1 Correlation matrix printed and punched on cards
29-63	Leave blank.
64-68	AFTER if transgeneration is to be performed <u>after</u> the check for values of variables to be deleted. Otherwise, leave blank and transgeneration will occur <u>before</u> the check.
69-70	00 Data input from cards 08 Data input from logical tape unit 8
71-72	Number of Variable Format Cards ($1 \leq k \leq 10$)

D

CODING INSTRUCTIONS AND ITEM NUMBERS

Item #	Column	Content
	Card 1	
1-56	1-56	Final Questionnaire - each column represents the score of 1 item.
57	58-59	Total number of comments each student received.
58	60-63	Length in number of words of first log.
59	64-67	Length of the last log.
60	68-69	Total score on final Reading Questionnaire.
61	71	Treatment Group - 1 = No Comment, 2 = Non-evaluative, 3 = Evaluative
	76	Card number, punch 1
	78-80	Identification - 78 = class (morning = 1, afternoon = 2) 79-80 = student number (1-33)
	Card 2	
62	1-2	Type of teacher student relationship.
63	3-4	Self perception of writing ability (items 1 and 2 combined).
64	5-6	Self perception of writing ability (item 3)
65	7-8	Questionnaire (achievement motivation)
66	9	My Reading Habits
67	10-12	How Do You View Yourself (self concept)
68	13-14	Intrinsic versus extrinsic control of reinforcement (Teacher Scale)
69	15-16	Age
70	17	Years in school Frosh = 1, Soph = 2, Jr. = 3, Sr. = 4, Grd. = 5
71	18	Marital status Married = 1, Single = 2
72	19	Does student work? yes = 1, no = 2
73	20-21	Number of hours student works per week
74	22-24	SAT Verbal
75	25-27	SAT Math
76	28-31	Grade point average
	76	Card number punch 2
	78-80	Identification - Same as for card 1

CORRELATION WITH ITEM DELETION BMD03D (Continued)

(g) Deletion Code Card(s)

Col.		
	1-6	DELETE
	7-8	Index of variable to which codes on on this card apply 00 if same codes apply to all variables. In this case, only <u>one</u> Deletion Code Card is prepared
	9-10	Number of deletion codes ($0 < c \leq 10$)
	11-16	First deletion code (keypunch decimal)
	17-22	Second deletion code (keypunch decimal)
	.	
	.	
	.	
	65-70	Tenth deletion code (keypunch decimal)

There must be the same number of Deletion Code Cards as indicated in Col. 20-21 of the Problem Card.

6. For a brief description of the computational procedure, refer to the Biomedical Computer Programs Manual. A reference copy is available in room G-175 of the Math Sciences Building.

(Dixon, 1968, pp. 2-3)

APPENDIX IV

CHI-SQUARE TABLES FOR ITEMS 1 THROUGH 40

CROSSED WITH TREATMENT GROUP

TABLE 1

Chi-Square for Item 5 "The instructor and I shared many of the same attitudes."

(1)	(2)		(3)	(4)	
QUES 61 TREATMENT GROUP	QUES 1 INST STU SHARE ATT		FREQ	PERCENT	
NO COMMENT	I/S SHARE FEW ATT		1	5.0	
NO COMMENT	I/S SHARE MANY ATT		19	95.0	
		TOTALS	20	100.0	1
	SD .2236	MEAN	1.95		
NON-EVALUATIVE COM	I/S SHARE FEW ATT		2	9.5	
NON-EVALUATIVE COM	I/S SHARE MANY ATT		19	90.5	
		TOTALS	21	100.0	2
	SD .3008	MEAN	1.90		
EVALUATIVE COMMENT	I/S SHARE FEW ATT		2	10.5	
EVALUATIVE COMMENT	I/S SHARE MANY ATT		17	89.5	
		TOTALS	19	100.0	3
	SD .3153	MEAN	1.89		

D F	.01 CRIT VAL	.05 CRIT VAL	CHI-SQUARE
2	9.2	6.0	.4

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

Column (1) (TREATMENT GROUP) lists the three possible treatment groups, Column (2) lists the two possible responses to item 5; I/S SHARE FEW ATT - subjects who disagreed with the item , and I/S SHARE MANY ATT - subjects who agreed with the item for each treatment group. Columns (3) and (4) give the frequency and the percentage for each treatment group for each possible response. Column (2) also includes the MEAN and standard deviation (SD) for each treatment group. A mean of 1 would indicate that every subject in that treatment group disagreed with the item and a mean of 2 (as is the case for NO COMMENT) would indicate that every subject agreed. D F are the degrees of freedom and that list and the critical values will not be reproduced in the following tables since they do not change. The last line lists the chi-square assumptions violated, if any, and the number of cells in which the assumptions were violated. (See Appendix III, Part B)

TABLE 2

Chi-Square for Item 2 "The logs were the most important part of the course."

QUES 61 TREATMENT GROUP	QUES 2 LOGS MOST IMPORT		FREQ	PERCENT	
NO COMMENT	LOGS NOT IMPORTANT		15	71.4	
NO COMMENT	LOGS ARE IMPORTANT		6	28.6	
		TOTALS	21	100.0	1
	SD .4629	MEAN	1.29		
NON-EVALUATIVE COM	LOGS NOT IMPORTANT		13	61.9	
NON-EVALUATIVE COM	LOGS ARE IMPORTANT		8	38.1	
		TOTALS	21	100.0	2
	SD .4976	MEAN	1.38		
EVALUATIVE COMMENT	LOGS NOT IMPORTANT		6	31.6	
EVALUATIVE COMMENT	LOGS ARE IMPORTANT		13	68.4	
		TOTALS	19	100.0	3
	SD .4776	MEAN	1.68		

CALC CHI SQ VAL
6.9 *

TABLE 3

Chi-Square for Item 3 "I would rather keep to safe and familiar things as opposed to new and different things even if it means making less of a gain."

QUES 61 TREATMENT GROUP	QUES 3 SAFE-NOT RISK TAKE	FREQ	PERCENT	
NO COMMENT	LIKE NEW THINGS	20	95.2	
NO COMMENT	LIKE SAFE THINGS	1	4.8	
	TOTALS	21	100.0	1
	SD .2182 MEAN	1.05		
NON-EVALUATIVE COM	LIKE NEW THINGS	18	85.7	
NON-EVALUATIVE COM	LIKE SAFE THINGS	3	14.3	
	TOTALS	21	100.0	2
	SD .3586 MEAN	1.14		
EVALUATIVE COMMENT	LIKE NEW THINGS	14	73.7	
EVALUATIVE COMMENT	LIKE SAFE THINGS	5	26.3	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.26		

CALC CHI SQ VAL
3.6

***1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 4

Chi-Square for Item 4 "I don't believe that the instructor cares whether I learn anything or not in here."

QUES 61 TREATMENT GROUP	QUES 4 INS NOT CARE LEARN	FREQ	PERCENT	
NO COMMENT	INS CARE ABT LEARN	19	90.5	
NO COMMENT	INS NOT CARE	2	9.5	
	TOTALS	21	100.0	1
	SD .3008 MEAN	1.10		
NON-EVALUATIVE COM	INS CARE ABT LEARN	18	85.7	
NON-EVALUATIVE COM	INS NOT CARE	3	14.3	
	TOTALS	21	100.0	2
	SD .3586 MEAN	1.14		
EVALUATIVE COMMENT	INS CARE ABT LEARN	17	89.5	
EVALUATIVE COMMENT	INS NOT CARE	2	10.5	
	TOTALS	19	100.0	3
	SD .3153 MEAN	1.11		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.2

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 5

Chi-Square for Item 5 "I feel that I really have gotten a lot out of P280 so far."

QUES 61 TREATMENT GROUP	QUES 5 I GOT LOTS IN P280	FREQ	PERCENT	
NO COMMENT	LEARN LITTLE P280	0	0.0	
NO COMMENT	LEARN MUCH IN P280	21	100.0	
	TOTALS	21	100.0	1
	SD 0.0000 MEAN	2.00		
NON-EVALUATIVE COM	LEARN LITTLE P280	5	23.8	
NON-EVALUATIVE COM	LEARN MUCH IN P280	16	76.2	
	TOTALS	21	100.0	2
	SD .4364 MEAN	1.76		
EVALUATIVE COMMENT	LEARN LITTLE P280	4	21.1	
EVALUATIVE COMMENT	LEARN MUCH IN P280	15	78.9	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.79		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	5.6

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 6

Chi-Square for Item 6 "The instructor didn't seem to like my logs."

QUES 61 TREATMENT GROUP	QUES 6 INS NOT LIKE LOGS	FREQ	PERCENT	
NO COMMENT	INS LIKE MY LOGS	15	78.9	
NO COMMENT	INS NOT LIKE LOGS	4	21.1	
	TOTALS	19	100.0	1
	SD .4189 MEAN	1.21		
NON-EVALUATIVE COM	INS LIKE MY LOGS	20	95.2	
NON-EVALUATIVE COM	INS NOT LIKE LOGS	1	4.8	
	TOTALS	21	100.0	2
	SD .2182 MEAN	1.05		
EVALUATIVE COMMENT	INS LIKE MY LOGS	18	94.7	
EVALUATIVE COMMENT	INS NOT LIKE LOGS	1	5.3	
	TOTALS	19	100.0	3
	SD .2294 MEAN	1.05		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.6

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 7

Chi-Square for Item 7 "Students should think of the instructor as one of them."

QUES 61 TREATMENT GROUP	QUES 7 INS AS ONE OF STUD	FREQ	PERCENT	
NO COMMENT	INS NOT ONE OF US	7	33.3	
NO COMMENT	INS LIKE A STUDENT	14	66.7	
	TOTALS	21	100.0	1
	SD .4830 MEAN	1.67		
NON-EVALUATIVE COM	INS NOT ONE OF US	6	28.6	
NON-EVALUATIVE COM	INS LIKE A STUDENT	15	71.4	
	TOTALS	21	100.0	2
	SD .4629 MEAN	1.71		
EVALUATIVE COMMENT	INS NOT ONE OF US	5	26.3	
EVALUATIVE COMMENT	INS LIKE A STUDENT	14	73.7	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.74		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.2

TABLE 8

Chi-Square for Item 8 "I hope we can continue to use logs for the rest of the semester."

QUES 61 TREATMENT GROUP	QUES 8 WANT TO CON LOGS		FREQ	PERCENT	
NO COMMENT	NOT CONTINUE LOGS		10	47.6	
NO COMMENT	CONTINUE TO USE LO		11	52.4	
		TOTALS	21	100.0	1
	SD .5118	MEAN	1.52		
NON-EVALUATIVE COM	NOT CONTINUE LOGS		7	33.3	
NON-EVALUATIVE COM	CONTINUE TO USE LO		14	66.7	
		TOTALS	21	100.0	2
	SD .4830	MEAN	1.67		
EVALUATIVE COMMENT	NOT CONTINUE LOGS		5	26.3	
EVALUATIVE COMMENT	CONTINUE TO USE LO		14	73.7	
		TOTALS	19	100.0	3
	SD .4524	MEAN	1.74		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.0

TABLE 9

Chi-Square for Item 9 "The logs were not helpful."

QUES 61 TREATMENT GROUP	QUES 9 LOGS NOT HELPFUL		FREQ	PERCENT	
NO COMMENT	LOGS WERE HELPFUL		11	52.4	
NO COMMENT	LOGS NOT HELPFUL		10	47.6	
		TOTALS	21	100.0	1
	SD .5118	MEAN	1.48		
NON-EVALUATIVE COM	LOGS WERE HELPFUL		13	61.9	
NON-EVALUATIVE COM	LOGS NOT HELPFUL		8	38.1	
		TOTALS	21	100.0	2
	SD .4976	MEAN	1.38		
EVALUATIVE COMMENT	LOGS WERE HELPFUL		18	94.7	
EVALUATIVE COMMENT	LOGS NOT HELPFUL		1	5.3	
		TOTALS	19	100.0	3
	SD .2294	MEAN	1.05		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	9.0

TABLE 10

Chi-Square for item 10 "I don't think that I will like being a teacher."

QUES 61 TREATMENT GROUP	QUES 10 NOT WANT BE TEACH	FREQ	PERCENT	
NO COMMENT	WANT TO BE TEACHER	20	95.2	
NO COMMENT	NOT WANT TO TEACH	1	4.8	
	TOTALS	21	100.0	1
	SD .2182 MEAN	1.05		
NON-EVALUATIVE COM	WANT TO BE TEACHER	16	76.2	
NON-EVALUATIVE COM	NOT WANT TO TEACH	5	23.8	
	TOTALS	21	100.0	2
	SD .4364 MEAN	1.24		
EVALUATIVE COMMENT	WANT TO BE TEACHER	15	78.9	
EVALUATIVE COMMENT	NOT WANT TO TEACH	4	21.1	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.2

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 11

Chi-Square for Item 11 "The instructor seemed to be very pleased with my logs."

QUES 61 TREATMENT GROUP	QUES 11 INS LIKE MY LOGS	FREQ	PERCENT	
NO COMMENT	INS NOT LIKE LOGS	8	42.1	
NO COMMENT	INS LIKE LOGS	11	57.9	
	TOTALS	19	100.0	1
	SD .5073 MEAN	1.58		
NON-EVALUATIVE COM	INS NOT LIKE LOGS	5	23.8	
NON-EVALUATIVE COM	INS LIKE LOGS	16	76.2	
	TOTALS	21	100.0	2
	SD .4364 MEAN	1.76		
EVALUATIVE COMMENT	INS NOT LIKE LOGS	1	5.3	
EVALUATIVE COMMENT	INS LIKE LOGS	18	94.7	
	TOTALS	19	100.0	3
	SD .2294 MEAN	1.95		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	7.1

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 12

Chi-Square for Item 12 "I thought the logs seemed unrelated to the rest of the course."

QUES 61 TREATMENT GROUP	QUES 12 LOG UNREL TO COURS	FREQ	PERCENT	
NO COMMENT	LOG RELAT TO COURS	15	71.4	
NO COMMENT	LOG NOT REALTED	6	28.6	
	TOTALS	21	100.0	1
	SD .4629 MEAN	1.29		
NON-EVALUATIVE COM	LOG RELAT TO COURS	17	81.0	
NON-EVALUATIVE COM	LOG NOT REALTED	4	19.0	
	TOTALS	21	100.0	2
	SD .4024 MEAN	1.19		
EVALUATIVE COMMENT	LOG RELAT TO COURS	18	94.7	
EVALUATIVE COMMENT	LOG NOT REALTED	1	5.3	
	TOTALS	19	100.0	3
	SD .2294 MEAN	1.05		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.6

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 13

Chi-Square for Item 13 "I always looked forward to writing my logs."

QUES 61 TREATMENT GROUP	QUES 13 LIKE WRITING LOGS	FREQ	PERCENT	
NO COMMENT	NOT LIKE TO WRITE	11	52.4	
NO COMMENT	LIKE TO WRITE LOGS	10	47.6	
	TOTALS	21	100.0	1
	SD .5118 MEAN	1.48		
NON-EVALUATIVE COM	NOT LIKE TO WRITE	12	57.1	
NON-EVALUATIVE COM	LIKE TO WRITE LOGS	9	42.9	
	TOTALS	21	100.0	2
	SD .5071 MEAN	1.43		
EVALUATIVE COMMENT	NOT LIKE TO WRITE	11	57.9	
EVALUATIVE COMMENT	LIKE TO WRITE LOGS	8	42.1	
	TOTALS	19	100.0	3
	SD .5073 MEAN	1.42		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.1

TABLE 14

Chi-Square for Item 14 "I enjoy P280 very much."

QUES 61 TREATMENT GROUP	QUES 14 ENJOY P280		FREQ	PERCENT	
NO COMMENT	I NOT ENJOY P280		0	0.0	
NO COMMENT	2ENJOY P280		21	100.0	
		TOTALS	21	100.0	1
	SD 0.0000	MEAN	2.00		
NON-EVALUATIVE COM	I NOT ENJOY P280		2	9.5	
NON-EVALUATIVE COM	2ENJOY P280		19	90.5	
		TOTALS	21	100.0	2
	SD .3008	MEAN	1.90		
EVALUATIVE COMMENT	I NOT ENJOY P280		5	26.3	
EVALUATIVE COMMENT	2ENJOY P280		14	73.7	
		TOTALS	19	100.0	3
	SD .4524	MEAN	1.74		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	6.9

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 15

Chi-Square for Item 15 "The instructor and I do not agree most of the time on educational issues."

QUES 61 TREATMENT GROUP	QUES 15 INS STU NOT AGREE	FREQ	PERCENT	
NO COMMENT	AGREE ON ED ISSUES	20	100.0	
NO COMMENT	NOT AGREE ON EDUC	0	0.0	
	TOTALS	20	100.0	1
	SD 0.0000 MEAN	1.00		
NON-EVALUATIVE COM	AGREE ON ED ISSUES	21	100.0	
NON-EVALUATIVE COM	NOT AGREE ON EDUC	0	0.0	
	TOTALS	21	100.0	2
	SD 0.0000 MEAN	1.00		
EVALUATIVE COMMENT	AGREE ON ED ISSUES	16	84.2	
EVALUATIVE COMMENT	NOT AGREE ON EDUC	3	15.8	
	TOTALS	19	100.0	3
	SD .3746 MEAN	1.16		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	6.8 *

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

*** ONE OR MORE EXP FREQS LESS THAN 1 -- 1 OUT OF 6

TABLE 16

Chi-Square for Item 16 "The logs motivated me to read more than I might have without them."

QUES 61 TREATMENT GROUP	QUES 16 LOGS MOTIV TO READ	FREQ	PERCENT	
NO COMMENT	LOGS NOT MOTIVATE	12	57.1	
NO COMMENT	MOTIV TO READ MORE	9	42.9	
	TOTALS	21	100.0	1
	SD .5071 MEAN	1.43		
NON-EVALUATIVE COM	LOGS NOT MOTIVATE	15	71.4	
NON-EVALUATIVE COM	MOTIV TO READ MORE	6	28.6	
	TOTALS	21	100.0	2
	SD .4629 MEAN	1.29		
EVALUATIVE COMMENT	LOGS NOT MOTIVATE	10	52.6	
EVALUATIVE COMMENT	MOTIV TO READ MORE	9	47.4	
	TOTALS	19	100.0	3
	SD .5130 MEAN	1.47		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.6

TABLE 17

Chi-Square for Item 17 "Teaching is hard work."

QUES 61 TREATMENT GROUP	QUES 17 TEACHING HARD WORK	FREQ	PERCENT	
NO COMMENT	TEACH NOT HARD WRK	1	4.8	
NO COMMENT	TEACHING HARD WORK	20	95.2	
	TOTALS	21	100.0	1
	SD .2182 MEAN	1.95		
NON-EVALUATIVE COM	TEACH NOT HARD WRK	2	9.5	
NON-EVALUATIVE COM	TEACHING HARD WORK	19	90.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.90		
EVALUATIVE COMMENT	TEACH NOT HARD WRK	2	10.5	
EVALUATIVE COMMENT	TEACHING HARD WORK	17	89.5	
	TOTALS	19	100.0	3
	SD .3153 MEAN	1.89		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.5

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 18

Chi-Square for Item 18 "I think I am getting less out of this course than the rest of my classes."

QUES 61 TREATMENT GROUP	QUES 18 GET LESS FROM CLAS	FREQ	PERCENT	
NO COMMENT	NOT GET LESS	20	95.2	
NO COMMENT	LESS THAN FR OTHER	1	4.8	
	TOTALS	21	100.0	1
	SD .2182 MEAN	1.05		
NON-EVALUATIVE COM	NOT GET LESS	17	81.0	
NON-EVALUATIVE COM	LESS THAN FR OTHER	4	19.0	
	TOTALS	21	100.0	2
	SD .4024 MEAN	1.19		
EVALUATIVE COMMENT	NOT GET LESS	14	73.7	
EVALUATIVE COMMENT	LESS THAN FR OTHER	5	26.3	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.26		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.5

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 19

Chi-Square for Item 19 "I would never want to use logs in my own teaching."

QUES 61 TREATMENT GROUP	QUES 19 NOT USE LOGS TEACH	FREQ	PERCENT	
NO COMMENT	I WANT TO USE LOGS	15	71.4	
NO COMMENT	NOT TEACH WITH LOG	6	28.6	
	TOTALS	21	100.0	1
	SD .4629 MEAN	1.29		
NON-EVALUATIVE COM	I WANT TO USE LOGS	16	76.2	
NON-EVALUATIVE COM	NOT TEACH WITH LOG	5	23.8	
	TOTALS	21	100.0	2
	SD .4364 MEAN	1.24		
EVALUATIVE COMMENT	I WANT TO USE LOGS	15	78.9	
EVALUATIVE COMMENT	NOT TEACH WITH LOG	4	21.1	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.3

TABLE 20

Chi-Square for Item 20 "I think that the instructor cares a gread deal about me as an individual."

QUES 61 TREATMENT GROUP	QUES 20 INS CARES ABOUT ME	FREQ	PERCENT	
NO COMMENT	NOT CARE ABOUT IND	2	10.0	
NO COMMENT	CARE ABOUT INDIVID	18	90.0	
	TOTALS	20	100.0	1
	SD .3078 MEAN	1.90		
NON-EVALUATIVE COM	NOT CARE ABOUT IND	2	9.5	
NON-EVALUATIVE COM	CARE ABOUT INDIVID	19	90.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.90		
EVALUATIVE COMMENT	NOT CARE ABOUT IND	2	10.5	
EVALUATIVE COMMENT	CARE ABOUT INDIVID	17	89.5	
	TOTALS	19	100.0	3
	SD .3153 MEAN	1.89		

D.F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.0

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 21

Chi-Square for Item 21 "I would rather do something new and different than the same old thing even if I might be risking failure."

QUES 61 TREATMENT GROUP	QUES 21 STU IS RISK TAKER	FREQ	PERCENT	
NO COMMENT	NOT DO NEW THINGS	2	9.5	
NO COMMENT	LIKE NEW THINGS	19	90.5	
	TOTALS	21	100.0	1
	SD .3008 MEAN	1.90		
NON-EVALUATIVE COM	NOT DO NEW THINGS	2	9.5	
NON-EVALUATIVE COM	LIKE NEW THINGS	19	90.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.90		
EVALUATIVE COMMENT	NOT DO NEW THINGS	1	5.3	
EVALUATIVE COMMENT	LIKE NEW THINGS	18	94.7	
	TOTALS	19	100.0	3
	SD .2294 MEAN	1.95		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.3

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 22

Chi-Square for Item 22 "I didn't learn very much at all in this class so far."

QUES 61 TREATMENT GROUP	QUES 22 NOT LEARN MUCH YET	FREQ	PERCENT	
NO COMMENT	LEARN LOTS IN CLAS	20	95.2	
NO COMMENT	NOT LEARN IN COURS	1	4.8	
	TOTALS	21	100.0	1
	SD .2182 MEAN	1.05		
NON-EVALUATIVE COM	LEARN LOTS IN CLAS	18	85.7	
NON-EVALUATIVE COM	NOT LEARN IN COURS	3	14.3	
	TOTALS	21	100.0	2
	SD .3586 MEAN	1.14		
EVALUATIVE COMMENT	LEARN LOTS IN CLAS	15	78.9	
EVALUATIVE COMMENT	NOT LEARN IN COURS	4	21.1	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.3

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 23

Chi-Square for Item 23 "Good Teachers have the respect of their students."

QUES 61 TREATMENT GROUP	QUES 23 STU RESPECT TEACH	FREQ	PERCENT	
NO COMMENT	GOOD INS NOT RESPT	0	0.0	
NO COMMENT	GOOD INS RESPECTED	21	100.0	
	TOTALS	21	100.0	1
	SD 0.0000 MEAN	2.00		
NON-EVALUATIVE COM	GOOD INS NOT RESPT	4	19.0	
NON-EVALUATIVE COM	GOOD INS RESPECTED	17	81.0	
	TOTALS	21	100.0	2
	SD .4024 MEAN	1.81		
EVALUATIVE COMMENT	GOOD INS NOT RESPT	3	15.8	
EVALUATIVE COMMENT	GOOD INS RESPECTED	16	84.2	
	TOTALS	19	100.0	3
	SD .3746 MEAN	1.84		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	4.2

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 24

Chi-Square for Item 24 "I disliked the thought of getting my logs back."

QUES 61 TREATMENT GROUP	QUES 24 DISLIKE LOGS BACK	FREQ	PERCENT	
NO COMMENT	LIKE GET LOGS BACK	18	85.7	
NO COMMENT	NOT WANT LOGS	3	14.3	
	TOTALS	21	100.0	1
	SD .3586 MEAN	1.14		
NON-EVALUATIVE COM	LIKE GET LOGS BACK	19	90.5	
NON-EVALUATIVE COM	NOT WANT LOGS	2	9.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.10		
EVALUATIVE COMMENT	LIKE GET LOGS BACK	15	78.9	
EVALUATIVE COMMENT	NOT WANT LOGS	4	21.1	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.0

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 25

Chi-Square for Item 25 "I think I am getting much more out of this course than most of my fellow students."

QUES 61 TREATMENT GROUP	QUES 25 GET MORE FROM CLAS		FREQ	PERCENT	
NO COMMENT	LESS FR CLASS THAN		9	42.9	
NO COMMENT	MORE THAN OTHER ST		12	57.1	
		TOTALS	21	100.0	1
	SD .5071	MEAN	1.57		
NON-EVALUATIVE COM	LESS FR CLASS THAN		10	47.6	
NON-EVALUATIVE COM	MORE THAN OTHER ST		11	52.4	
		TOTALS	21	100.0	2
	SD .5118	MEAN	1.52		
EVALUATIVE COMMENT	LESS FR CLASS THAN		10	52.6	
EVALUATIVE COMMENT	MORE THAN OTHER ST		9	47.4	
		TOTALS	19	100.0	3
	SD .5130	MEAN	1.47		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.3

TABLE 26

Chi-Square for Item 26 "The instructor's response on my logs was very helpful."

QUES 61 TREATMENT GROUP	QUES 26 INS LOG RESP HELPF	FREQ	PERCENT	
NO COMMENT	LOG RESP NOT HELP	18	90.0	
NO COMMENT	INS RESP HELPFUL	2	10.0	
	TOTALS	20	100.0	1
	SD .3078 MEAN	1.10		
NON-EVALUATIVE COM	LOG RESP NOT HELP	2	9.5	
NON-EVALUATIVE COM	INS RESP HELPFUL	19	90.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.90		
EVALUATIVE COMMENT	LOG RESP NOT HELP	5	26.3	
EVALUATIVE COMMENT	INS RESP HELPFUL	14	73.7	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.74		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	29.9 **

TABLE 27

Chi-Square for Item 27 "I think my logs are much better than those of my classmates."

QUES 61 TREATMENT GROUP	QUES 27 LOGS BETTER OTHERS	FREQ	PERCENT	
NO COMMENT	LOGS WORSE OF OTHR	16	80.0	
NO COMMENT	MY LOGS ARE BETTER	4	20.0	
	TOTALS	20	100.0	1
	SD .4104 MEAN	1.20		
NON-EVALUATIVE COM	LOGS WORSE OF OTHR	16	76.2	
NON-EVALUATIVE COM	MY LOGS ARE BETTER	5	23.8	
	TOTALS	21	100.0	2
	SD .4364 MEAN	1.24		
EVALUATIVE COMMENT	LOGS WORSE OF OTHR	15	78.9	
EVALUATIVE COMMENT	MY LOGS ARE BETTER	4	21.1	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.09

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 28

Chi-Square for Item 28 "If I never write another reaction log it will be too soon."

QUES 61 - TREATMENT GROUP	QUES 28 NOT WRITE MORE LOG	FREQ	PERCENT	
NO COMMENT	WANT WRITE MORE LG	14	66.7	
NO COMMENT	NO MORE LOGS	7	33.3	
	TOTALS	21	100.0	1
	SD .4830 MEAN	1.33		
NON-EVALUATIVE COM	WANT WRITE MORE LG	14	66.7	
NON-EVALUATIVE COM	NO MORE LOGS	7	33.3	
	TOTALS	21	100.0	2
	SD .4830 MEAN	1.33		
EVALUATIVE COMMENT	WANT WRITE MORE LG	15	78.9	
EVALUATIVE COMMENT	NO MORE LOGS	4	21.1	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.9

TABLE 29

Chi-Square for Item 29 "Good discipline is more important than the students liking the instructor."

QUES 61 TREATMENT GROUP	QUES 29 GOOD DISCIP IMPORT		FREQ	PERCENT	
NO COMMENT	LIK INS MO IMP DIS		17	81.0	
NO COMMENT	DIS MO IMP LIK INS		4	19.0	
		TOTALS	21	100.0	1
	SD .4024	MEAN	1.19		
NON-EVALUATIVE COM	LIK INS MO IMP DIS		18	85.7	
NON-EVALUATIVE COM	DIS MO IMP LIK INS		3	14.3	
		TOTALS	21	100.0	2
	SD .3586	MEAN	1.14		
EVALUATIVE COMMENT	LIK INS MO IMP DIS		12	63.2	
EVALUATIVE COMMENT	DIS MO IMP LIK INS		7	36.8	
		TOTALS	19	100.0	3
	SD .4956	MEAN	1.37		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.1

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 30

Chi-Square for Item 30 "I would like to have had more reactions from the instructor to my logs."

QUES 61 TREATMENT GROUP	QUES 30 WANT MORE INS REAC	FREQ	PERCENT	
NO COMMENT	WANT LESS REACTION	2	9.5	
NO COMMENT	WANT MORE REACTION	19	90.5	
	TOTALS	21	100.0	1
	SD .3008 MEAN	1.90		
NON-EVALUATIVE COM	WANT LESS REACTION	9	42.9	
NON-EVALUATIVE COM	WANT MORE REACTION	12	57.1	
	TOTALS	21	100.0	2
	SD .5071 MEAN	1.57		
EVALUATIVE COMMENT	WANT LESS REACTION	9	47.4	
EVALUATIVE COMMENT	WANT MORE REACTION	10	52.6	
	TOTALS	19	100.0	3
	SD .5130 MEAN	1.53		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	7.9 *

TABLE 31

Chi-Square for Item 31 "I am quite nervous when the logs are being returned."

QUES 61 TREATMENT GROUP	QUES 31 NERVOS GET LOG BAK	FREQ	PERCENT	
NO COMMENT	RELAX GET LOGS BAK	17	81.0	
NO COMMENT	NERVOUS LOGS BACK	4	19.0	
	TOTALS	21	100.0	1
	SD .4024 MEAN	1.19		
NON-EVALUATIVE COM	RELAX GET LOGS BAK	19	90.5	
NON-EVALUATIVE COM	NERVOUS LOGS BACK	2	9.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.10		
EVALUATIVE COMMENT	RELAX GET LOGS BAK	16	84.2	
EVALUATIVE COMMENT	NERVOUS LOGS BACK	3	15.8	
	TOTALS	19	100.0	3
	SD .3746 MEAN	1.16		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.7

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 32

Chi-Square for Item 32 "Teaching has many rewards."

QUES 61 TREATMENT GROUP	QUES 32 TEACH HAS REWARDS	FREQ	PERCENT	
NO COMMENT	TEACH FEW REWARDS	0	0.0	
NO COMMENT	TEACH MANY REWARDS	21	100.0	
	TOTALS	21	100.0	1
	SD 0.0000 MEAN	2.00		
NON-EVALUATIVE COM	TEACH FEW REWARDS	1	4.8	
NON-EVALUATIVE COM	TEACH MANY REWARDS	20	95.2	
	TOTALS	21	100.0	2
	SD .2182 MEAN	1.95		
EVALUATIVE COMMENT	TEACH FEW REWARDS	4	21.1	
EVALUATIVE COMMENT	TEACH MANY REWARDS	15	78.9	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.79		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL	
2	9.2	6.0	6.3	*

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 33

Chi-Square for Item 33 "I didn't like the instructor's use of the reaction logs as part of an experiment."

QUES 61 TREATMENT GROUP	QUES 33 NOT LIK EXPERIMENT	FREQ	PERCENT	
NO COMMENT	LIK LOG EXPERIMENT	15	71.4	
NO COMMENT	NOT LIKE EXPERIMEN	6	28.6	
	TOTALS	21	100.0	1
	SD .4629 MEAN	1.29		
NON-EVALUATIVE COM	LIK LOG EXPERIMENT	18	85.7	
NON-EVALUATIVE COM	NOT LIKE EXPERIMEN	3	14.3	
	TOTALS	21	100.0	2
	SD .3586 MEAN	1.14		
EVALUATIVE COMMENT	LIK LOG EXPERIMENT	16	84.2	
EVALUATIVE COMMENT	NOT LIKE EXPERIMEN	3	15.8	
	TOTALS	19	100.0	3
	SD .3746 MEAN	1.16		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.6

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 34

Chi-Square for Item 34 "A teacher should be respected by his students."

QUES 61 TREATMENT GROUP	QUES 34 TEACH RESPCT BYSTU	FREQ	PERCENT	
NO COMMENT	STU NO RESPCT TEAC	1	4.8	
NO COMMENT	STU SHOULD RESPECT	20	95.2	
	TOTALS	21	100.0	1
	SD .2182 MEAN	1.95		
NON-EVALUATIVE COM	STU NO RESPCT TEAC	0	0.0	
NON-EVALUATIVE COM	STU SHOULD RESPECT	21	100.0	
	TOTALS	21	100.0	2
	SD 0.0000 MEAN	2.00		
EVALUATIVE COMMENT	STU NO RESPCT TEAC	2	10.5	
EVALUATIVE COMMENT	STU SHOULD RESPECT	17	89.5	
	TOTALS	19	100.0	3
	SD .3153 MEAN	1.89		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.3

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

*** ONE OR MORE EXP FREQS LESS THAN 1 -- 1 OUT OF 6

TABLE 35

Chi-Square for Item 35 "The logs helped me to put together and understand what I read and experienced."

QUES 61 TREATMENT GROUP	QUES 35 LOGS HELP UNDERSTA	FREQ	PERCENT	
NO COMMENT	LOGS NOT HELP	6	28.6	
NO COMMENT	INCREASE UNDERSTAN	15	71.4	
	TOTALS	21	100.0	1
	SD .4629 MEAN	1.71		
NON-EVALUATIVE COM	LOGS NOT HELP	8	38.1	
NON-EVALUATIVE COM	INCREASE UNDERSTAN	13	61.9	
	TOTALS	21	100.0	2
	SD .4976 MEAN	1.62		
EVALUATIVE COMMENT	LOGS NOT HELP	3	15.8	
EVALUATIVE COMMENT	INCREASE UNDERSTAN	16	84.2	
	TOTALS	19	100.0	3
	SD .3746 MEAN	1.84		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.4

TABLE 36

Chi-Square for Item 36 "I would very much like to use logs when I teach."

QUES 61 TREATMENT GROUP	QUES 36 USE LOG WHEN TEACH	FREQ	PERCENT	
NO COMMENT	NOT USE LOGS AS IN	5	23.8	
NO COMMENT	USE LOG WHEN TEACH	16	76.2	
	TOTALS	21	100.0	1
	SD .4364 MEAN	1.76		
NON-EVALUATIVE COM	NOT USE LOGS AS IN	11	52.4	
NON-EVALUATIVE COM	USE LOG WHEN TEACH	10	47.6	
	TOTALS	21	100.0	2
	SD .5118 MEAN	1.48		
EVALUATIVE COMMENT	NOT USE LOGS AS IN	5	26.3	
EVALUATIVE COMMENT	USE LOG WHEN TEACH	14	73.7	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.74		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	4.6

TABLE 37

Chi-Square for Item 37 "I always looked forward to getting my logs back from the instructor."

QUES 61 TREATMENT GROUP	QUES 37 WANT GET LOGS BACK	FREQ	PERCENT	
NO COMMENT	NOT WANT LOGS BACK	11	52.4	
NO COMMENT	WANT LOG BACK	10	47.6	
	TOTALS	21	100.0	1
	SD .5118 MEAN	1.48		
NON-EVALUATIVE COM	NOT WANT LOGS BACK	5	23.8	
NON-EVALUATIVE COM	WANT LOG BACK	16	76.2	
	TOTALS	21	100.0	2
	SD .4364 MEAN	1.76		
EVALUATIVE COMMENT	NOT WANT LOGS BACK	6	31.6	
EVALUATIVE COMMENT	WANT LOG BACK	13	68.4	
	TOTALS	19	100.0	3
	SD .4776 MEAN	1.68		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.9

TABLE 38

Chi-Square for Item 38 "I think my logs are much worse than those of other students in this class."

QUES 61 TREATMENT GROUP	QUES 38 MY LOGS WORSE THAN		FREQ	PERCENT	
NO COMMENT	LOGS BETTER OTHERS		14	70.0	
NO COMMENT	LOGS WORSE OTHERS		6	30.0	
		TOTALS	20	100.0	1
	SD .4702	MEAN	1.30		
NON-EVALUATIVE COM	LOGS BETTER OTHERS		18	85.7	
NON-EVALUATIVE COM	LOGS WORSE OTHERS		3	14.3	
		TOTALS	21	100.0	2
	SD .3586	MEAN	1.14		
EVALUATIVE COMMENT	LOGS BETTER OTHERS		11	57.9	
EVALUATIVE COMMENT	LOGS WORSE OTHERS		8	42.1	
		TOTALS	19	100.0	3
	SD .5073	MEAN	1.42		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.8

TABLE 39

Chi-Square for Item 39 "The logs were not an important part of this course."

QUES 61 TREATMENT GROUP	QUES 39 LOGS NOT IMPT CLAS		FREQ	PERCENT	
NO COMMENT	IMPT PART OF COURS		14	66.7	
NO COMMENT	LOGS NOT IMPORTANT		7	33.3	
		TOTALS	21	100.0	1
	SD .4830	MEAN	1.33		
NON-EVALUATIVE COM	IMPT PART OF COURS		17	81.0	
NON-EVALUATIVE COM	LOGS NOT IMPORTANT		4	19.0	
		TOTALS	21	100.0	2
	SD .4024	MEAN	1.19		
EVALUATIVE COMMENT	IMPT PART OF COURS		14	73.7	
EVALUATIVE COMMENT	LOGS NOT IMPORTANT		5	26.3	
		TOTALS	19	100.0	3
	SD .4524	MEAN	1.26		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.1

TABLE 40

Chi-Square for Item 40 "The logs were very relevant to the rest of the course."

QUES 61 TREATMENT GROUP	QUES 40 LOGS REL REST CLAS	FREQ	PERCENT	
NO COMMENT	LOGS NOT REL	6	28.6	
NO COMMENT	REL TO REST OF CLS	15	71.4	
	TOTALS	21	100.0	1
	SD .4629 MEAN	1.71		
NON-EVALUATIVE COM	LOGS NOT REL	7	33.3	
NON-EVALUATIVE COM	REL TO REST OF CLS	14	66.7	
	TOTALS	21	100.0	2
	SD .4830 MEAN	1.67		
EVALUATIVE COMMENT	LOGS NOT REL	4	21.1	
EVALUATIVE COMMENT	REL TO REST OF CLS	15	78.9	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.79		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.7

TABLE 41

Chi-Square for Item 41 "I'm sure that I will really like being a teacher."

QUES 61 TREATMENT GROUP	QUES 41 WILL LIK BE TEACHR	FREQ	PERCENT	
NO COMMENT	NOT LIKE TEACHING	1	4.8	
NO COMMENT	LIKE BEING TEACHER	20	95.2	
	TOTALS	21	100.0	1
	SD .2182 MEAN	1.95		
NON-EVALUATIVE COM	NOT LIKE TEACHING	5	23.8	
NON-EVALUATIVE COM	LIKE BEING TEACHER	16	76.2	
	TOTALS	21	100.0	2
	SD .4364 MEAN	1.76		
EVALUATIVE COMMENT	NOT LIKE TEACHING	5	26.3	
EVALUATIVE COMMENT	LIKE BEING TEACHER	14	73.7	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.74		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.8

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 42

Chi-Square for Item 42 "I have not liked P280 very much so far."

QUES 61 TREATMENT GROUP	QUES 42 NOT LIKE P280 YET	FREQ	PERCENT	
NO COMMENT	LIKE P280 SO FAR	19	90.5	
NO COMMENT	DISLIKE P280	2	9.5	
	TOTALS	21	100.0	1
	SD .3008 MEAN	1.10		
NON-EVALUATIVE COM	LIKE P280 SO FAR	19	90.5	
NON-EVALUATIVE COM	DISLIKE P280	2	9.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.10		
EVALUATIVE COMMENT	LIKE P280 SO FAR	14	73.7	
EVALUATIVE COMMENT	DISLIKE P280	5	26.3	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.26		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.9

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 43

Chi-Square for Item 43 "It is important for a teacher to be liked by his students."

QUES 61 TREATMENT GROUP	QUES 43 IMP STUDNT LIK INS		FREQ	PERCENT	
NO COMMENT	STU NOT LIKE INSTR		3	14.3	
NO COMMENT	STU LIKE INSTRUCTR		18	85.7	
		TOTALS	21	100.0	1
	SD .3586	MEAN	1.86		
NON-EVALUATIVE COM	STU NOT LIKE INSTR		4	19.0	
NON-EVALUATIVE COM	STU LIKE INSTRUCTR		17	81.0	
		TOTALS	21	100.0	2
	SD .4024	MEAN	1.81		
EVALUATIVE COMMENT	STU NOT LIKE INSTR		3	15.8	
EVALUATIVE COMMENT	STU LIKE INSTRUCTR		16	84.2	
		TOTALS	19	100.0	3
	SD .3746	MEAN	1.84		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.1

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 44

Chi-Square for Item 44 "The logs seemed to discourage me from reading."

QUES 61 TREATMENT GROUP	QUES 44 LOGS REDUCE READIN	FREQ	PERCENT	
NO COMMENT	ENCOURAGED READING	18	85.7	
NO COMMENT	DISCOURAGED READ	3	14.3	
	TOTALS	21	100.0	1
	SD .3586 MEAN	1.14		
NON-EVALUATIVE COM	ENCOURAGED READING	20	95.2	
NON-EVALUATIVE COM	DISCOURAGED READ	1	4.8	
	TOTALS	21	100.0	2
	SD .2182 MEAN	1.05		
EVALUATIVE COMMENT	ENCOURAGED READING	15	78.9	
EVALUATIVE COMMENT	DISCOURAGED READ	4	21.1	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.3

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 45

Chi-Square for Item 45 "The instructor's response to my logs was not very helpful."

QUES 61 TREATMENT GROUP	QUES 45 INS RESP NOT HELP	FREQ	PERCENT	
NO COMMENT	RESPONSE HELPFUL	5	25.0	
NO COMMENT	RESP NOT HELPFUL	15	75.0	
	TOTALS	20	100.0	1
	SD .4443 MEAN	1.75		
NON-EVALUATIVE COM	RESPONSE HELPFUL	18	85.7	
NON-EVALUATIVE COM	RESP NOT HELPFUL	3	14.3	
	TOTALS	21	100.0	2
	SD .3586 MEAN	1.14		
EVALUATIVE COMMENT	RESPONSE HELPFUL	14	73.7	
EVALUATIVE COMMENT	RESP NOT HELPFUL	5	26.3	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.26		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	17.6 **

TABLE 46

Chi-Square for Item 46 "I usually dreaded having to write my logs."

QUES 61 TREATMENT GROUP	QUES 46 DREADED WRITE LOGS		FREQ	PERCENT	
NO COMMENT	LIKE WRITING LOGS		13	61.9	
NO COMMENT	DREAD LOGS		8	38.1	
		TOTALS	21	100.0	1
	SD .4976	MEAN	1.38		
NON-EVALUATIVE COM	LIKE WRITING LOGS		14	66.7	
NON-EVALUATIVE COM	DREAD LOGS		7	33.3	
		TOTALS	21	100.0	2
	SD .4830	MEAN	1.33		
EVALUATIVE COMMENT	LIKE WRITING LOGS		9	47.4	
EVALUATIVE COMMENT	DREAD LOGS		10	52.6	
		TOTALS	19	100.0	3
	SD .5130	MEAN	1.53		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.6

TABLE 47

Chi-Square for Item 47 "I would like to have had less of a response from my instructor on my logs."

QUES 61 TREATMENT GROUP	QUES 47 WANT LES INST RESP		FREQ	PERCENT	
NO COMMENT	WANT MORE RESPONSE		20	95.2	
NO COMMENT	WANT LESS RESPONSE		1	4.8	
		TOTALS	21	100.0	1
	SD .2182	MEAN	1.05		
NON-EVALUATIVE COM	WANT MORE RESPONSE		17	81.0	
NON-EVALUATIVE COM	WANT LESS RESPONSE		4	19.0	
		TOTALS	21	100.0	2
	SD .4024	MEAN	1.19		
EVALUATIVE COMMENT	WANT MORE RESPONSE		15	78.9	
EVALUATIVE COMMENT	WANT LESS RESPONSE		4	21.1	
		TOTALS	19	100.0	3
	SD .4189	MEAN	1.21		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.5

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 48

Chi-Square for Item 48 "I was pleased to be part of an experiment."

QUES 61 TREATMENT GROUP	QUES 48 LIKED BE EXPERIMEN	FREQ	PERCENT	
NO COMMENT	DISLIKE EXPERIMENT	4	19.0	
NO COMMENT	LIKE BE PART OF EX	17	81.0	
	TOTALS	21	100.0	1
	SD .4024 MEAN	1.81		
NON-EVALUATIVE COM	DISLIKE EXPERIMENT	2	9.5	
NON-EVALUATIVE COM	LIKE BE PART OF EX	19	90.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.90		
EVALUATIVE COMMENT	DISLIKE EXPERIMENT	4	21.1	
EVALUATIVE COMMENT	LIKE BE PART OF EX	15	78.9	
	TOTALS	19	100.0	3
	SD .4189 MEAN	1.79		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.1

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 49

Chi-Square for Item 51 "Did you attempt to change the content of your logs in the hope that I would respond or respond differently to them."

QUES 61 TREATMENT GROUP	QUES 51 CHANG LOG CONTENT	FREQ	PERCENT	
NO COMMENT	I CHANGED LOG	2	9.5	
NO COMMENT	DID NOT CHANGE LOG	19	90.5	
	TOTALS	21	100.0	1
	SD .3008 MEAN	1.90		
NON-EVALUATIVE COM	I CHANGED LOG	2	9.5	
NON-EVALUATIVE COM	DID NOT CHANGE LOG	19	90.5	
	TOTALS	21	100.0	2
	SD .3008 MEAN	1.90		
EVALUATIVE COMMENT	I CHANGED LOG	1	5.3	
EVALUATIVE COMMENT	DID NOT CHANGE LOG	18	94.7	
	TOTALS	19	100.0	3
	SD .2294 MEAN	1.95		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.3

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 3 OUT OF 6

TABLE 50

Chi-Square for Item 52 "Did you read the comments on your logs?"

QUES 61 TREATMENT GROUP	QUES 52 READ LOG COMMENTS	FREQ	PERCENT	
NO COMMENT	I READ COMMENTS	0	0.0	
NO COMMENT	DID NOT READ COMEN	1	100.0	
	TOTALS	1	100.0	1
	SD 0.0000 MEAN	2.00		
NON-EVALUATIVE COM	I READ COMMENTS	21	100.0	
NON-EVALUATIVE COM	DID NOT READ COMEN	0	0.0	
	TOTALS	21	100.0	2
	SD 0.0000 MEAN	1.00		
EVALUATIVE COMMENT	I READ COMMENTS	19	100.0	
EVALUATIVE COMMENT	DID NOT READ COMEN	0	0.0	
	TOTALS	19	100.0	3
	SD 0.0000 MEAN	1.00		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	41.0

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 4 OUT OF 6

*** ONE OR MORE EXP FREQS LESS THAN 1 -- 4 OUT OF 6

TABLE 51

Chi-Square for Item 53 "Were the comments helpful?"

QUES 61 TREATMENT GROUP	QUES 53 WERE COMENT HELP	FREQ	PERCENT	
NO COMMENT	COMENTS HELPFUL	0	0.0	
NO COMMENT	COMENT NOT HELPFUL	1	100.0	
	TOTALS	1	100.0	1
	SD 0.0000 MEAN	2.00		
NON-EVALUATIVE COM	COMENTS HELPFUL	21	100.0	
NON-EVALUATIVE COM	COMENT NOT HELPFUL	0	0.0	
	TOTALS	21	100.0	2
	SD 0.0000 MEAN	1.00		
EVALUATIVE COMMENT	COMENTS HELPFUL	14	73.7	
EVALUATIVE COMMENT	COMENT NOT HELPFUL	5	26.3	
	TOTALS	19	100.0	3
	SD .4524 MEAN	1.26		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	11.5

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 4 OUT OF 6

*** ONE OR MORE EXP FREQS LESS THAN 1 -- 2 OUT OF 6

TABLE 52

Chi-Square for Item 54 "Would you have preferred to not have the teacher comment on your logs?"

QUES 61 TREATMENT GROUP	QUES 54 PREFER NO COMMENT	FREQ	PERCENT	
NO COMMENT	PREFER COMMENT	0	0.0	
NO COMMENT	PREFER NO COMMENT	2	100.0	
	TOTALS	2	100.0	1
	SD 0.0000 MEAN	2.00		
NON-EVALUATIVE COM	PREFER COMMENT	0	0.0	
NON-EVALUATIVE COM	PREFER NO COMMENT	21	100.0	
	TOTALS	21	100.0	2
	SD 0.0000 MEAN	2.00		
EVALUATIVE COMMENT	PREFER COMMENT	3	15.8	
EVALUATIVE COMMENT	PREFER NO COMMENT	16	84.2	
	TOTALS	19	100.0	3
	SD .3746 MEAN	1.84		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	3.9

*** 1/5 OR MORE EXP FREQS LESS THAN 5 -- 4 OUT OF 6

*** ONE OR MORE EXP FREQS LESS THAN 1 -- 1 OUT OF 6

TABLE 53

Chi-Square for Item 55 "About how much time did you spend per week writing your logs?"

QUES 61 TREATMENT GROUP	QUES 55 TIME WEEK ON LOGS		FREQ	PERCENT	
NO COMMENT	SPENT 1 HR OR LESS		6	60.0	
NO COMMENT	SPENT MORE 1 HOUR		4	40.0	
		TOTALS	10	100.0	1
	SD .5164	MEAN	1.40		
NON-EVALUATIVE COM	SPENT 1 HR OR LESS		12	57.1	
NON-EVALUATIVE COM	SPENT MORE 1 HOUR		9	42.9	
		TOTALS	21	100.0	2
	SD .5071	MEAN	1.43		
EVALUATIVE COMMENT	SPENT 1 HR OR LESS		9	47.4	
EVALUATIVE COMMENT	SPENT MORE 1 HOUR		10	52.6	
		TOTALS	19	100.0	3
	SD .5130	MEAN	1.53		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	.5

TABLE 54

Chi-Square for Item 56 "Did the amount of time tend to increase or decrease as the semester wore on?

QUES 61 TREATMENT GROUP	QUES 56 TIME INCREAS OR DE		FREQ	PERCENT	
NO COMMENT	TIME SPENT INCREAS		3	33.3	
NO COMMENT	TIME SPENT DECREAS		6	66.7	
		TOTALS	9	100.0	1
	SD	.5000 MEAN	1.67		
NON-EVALUATIVE COM	TIME SPENT INCREAS		9	52.9	
NON-EVALUATIVE COM	TIME SPENT DECREAS		8	47.1	
		TOTALS	17	100.0	2
	SD	.5145 MEAN	1.47		
EVALUATIVE COMMENT	TIME SPENT INCREAS		7	38.9	
EVALUATIVE COMMENT	TIME SPENT DECREAS		11	61.1	
		TOTALS	18	100.0	3
	SD	.5016 MEAN	1.61		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.1

TABLE 55

Chi-Square for the Length of the Last Log

QUES 61 TREATMENT GROUP	QUES 59 LENGTH OF LAST LOG	FREQ	PERCENT	
NO COMMENT	LAST LOG LESS 320	10	47.6	
NO COMMENT	LAST LOG 321-1200	11	52.4	
	TOTALS	21	100.0	1
	SD .5118 MEAN	1.52		
NON-EVALUATIVE COM	LAST LOG LESS 320	12	57.1	
NON-EVALUATIVE COM	LAST LOG 321-1200	9	42.9	
	TOTALS	21	100.0	2
	SD .5071 MEAN	1.43		
EVALUATIVE COMMENT	LAST LOG LESS 320	13	68.4	
EVALUATIVE COMMENT	LAST LOG 321-1200	6	31.6	
	TOTALS	19	100.0	3
	SD .4776 MEAN	1.32		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	1.7

TABLE 56

Chi-Square for Final Reading Questionnaire

QUES 61 TREATMENT GROUP	QUES 60 FINAL READ QUEST		FREQ	PERCENT	
NO COMMENT	READ LESS		8	38.1	
NO COMMENT	READ A LOT		13	61.9	
		TOTALS	21	100.0	1
	SD .4976	MEAN	1.62		
NON-EVALUATIVE COM	READ LESS		11	52.4	
NON-EVALUATIVE COM	READ A LOT		10	47.6	
		TOTALS	21	100.0	2
	SD .5118	MEAN	1.48		
EVALUATIVE COMMENT	READ LESS		12	63.2	
EVALUATIVE COMMENT	READ A LOT		7	36.8	
		TOTALS	19	100.0	3
	SD .4956	MEAN	1.37		

D F	.01 CRIT VAL	.05 CRIT VAL	CALC CHI SQ VAL
2	9.2	6.0	2.5

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