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A study of the relationship between cognitive styles and grades received on student ratings of community college faculty.

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A STUDY OF THE RELATIONSHIP BETWEEN COGNITIVE STYLES AND GRADES RECEIVED ON STUDENT RATINGS OF COMMUNITY COLLEGE FACULTY

A Dissertation Presented

by

CHARLES C. SELF

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Education

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ABSTRACT

A Study of the Relationship Between Cognitive Styles and Grades Received on Student Ratings of Community College Faculty

(February 1985)

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The purpose of this study was to test the following hypothesis: Field-independent students use faculty evaluations as a mechanism to retaliate against faculty who assign them poor grades.

The subjects participating in this study were 205 students attending an urban community college. The following data were collected from each student: (1) cognitive style (as determined from the GEFT), (2) a completed faculty evaluation form, (3) sex, (4) expected grade, and (5) final grade as determined by the faculty member evaluated.

The data were then processed by a BASIC translation of the ANALATI computer program of Dowaliby & Berliner. This program utilizes the Johnson-Neyman technique and allows for optional use of the Potthoff modification. The Potthoff option was used in this study.

When faculty evaluation scores were regressed on final grades an interactive relationship was found to exist between a student's

cognitive style and the degree to which the grade he/she receives influences the rating he/she gives an instructor. However, when the same test was conducted using expected grades no interaction was found to exist. It is likely that the conflict was the result of an abnormally skewed distribution of the expected grades of field-independent students. The hypothesis was not rejected.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Research has shown that teachers and students with similar cognitive styles tend to rate each other more highly than individuals with differing cognitive styles (DiStefano, 1969). Investigating the effect of this phenomenon on the evaluation of community college faculty by students and utilizing more refined statistical procedures, Self (1983) found that the match/mismatch effect was demonstrated only by students identified as field-dependent. Thus, the question arises: Are field-independent students less attracted to individuals with a similar cognitive style than are field-dependents, or is there another factor operating which masks the effect of this mutual attraction? There is some evidence to suspect that other factors may be involved. Oltman et al. (1975) found that other classroom variables could modify cognitive style match/mismatch effects. Faculty repeatedly express concern that there is a correlation between the grades a student receives and the ratings given his/her instructor (Aleamoni, 1974). The literature does suggest that this is a possibility. Studies have shown that field-dependent persons are less likely to express (and perhaps even feel) hostility toward other persons than field-independents (Bogo et al., 1970; Ihilevich and Gleser, 1971; Witkin et al., 1977).

The literature reveals conflicting results with respect to studies concerned with the question of whether grades have any effect on the

evaluation of faculty by students. Investigations in this area began in 1928, and the results of studies between 1928 and 1940 were negative (Aversano, 1976). However, Elliott (1950) found a positive relationship between student achievement and instructor ratings. Since then other researchers have obtained similar results (Aniheff, 1953; Weaver, 1960; Rodin and Rodin, 1972; Phutinart, 1982). However, it cannot be assumed that since 1950 the nature of students has become more vengeful. Other modern studies have not shown a positive relationship between grades and instructor ratings (Hildebrand, 1971; Frey, 1973).

While such discrepancies do exist, some authors, after having reviewed the total body of knowledge in the area, have concluded that small but significant correlations do exist between the grades students receive and the ratings they give faculty (Centra, 1979; Aubrecht, 1979). Centra (1979) seemingly dismisses these correlations as unimportant, however they do offer a springboard for thought. Consider the following assumptions: (1) only field-independent individuals exhibit aggression toward external objects or individuals. (2) A small but significant correlation exists between a student's grade and the ratings that student gives a faculty member, and that relationship exists as a result of the student's desire to punish or reward an instructor for the grade received. If these two statements are true then it may be generalized that there is an interactive relationship between a student's cognitive style and the degree to which the grade he or she receives influences the rating he or she gives an instructor. Since the truth of this conclusion rests on both of the assumptions being true,

it must be regarded cautiously and should be considered more as a question than as a definitive answer. Do field-independent students use faculty evaluations as a mechanism to retailiate against faculty who assign them poor grades? It is this question that the following study will attempt to address.

Purpose of the Study

There are two reasonable answers to the question posed in the preceding section: (1) yes, and (2) no. A hypothesis may be created by making the question a positive statement, and the development of a null-hypothesis can be accomplished by making the statement negative. While it is customary to use a null-hypothesis in studies of this type, it is felt that in this case to do so would only confuse the logic of the study. Thus, the purpose of this study is to test the following hypothesis:

> Field-independent students use faculty evaluations as a mechanism to retailiate against faculty who assign them poor grades, but will not unfairly reward faculty who assign them good grades.

If this statement is true then the following prediction can be made. An analysis of the grades received and faculty ratings given by two groups of students, field-dependents and field-independents, will result in regression lines with slopes which are significantly non-parallel.

If the conditions noted above are not found to occur then it may safely be assumed that the hypothesis is not supported, and the answer to the question is no. If, on the other hand, the anticipated results occur it cannot be assumed that the statement is true. While the hypothesis could never be proven to be true, it could be supported by making other predictions which could be verifiable from the literature.

Significance of the Study

Present demands to find more objective methods to evaluate college teachers arise from needs internal to the institutions and external pressures. During the expansion years of the 1960s, colleges were pressed to find and keep competent faculty (Centra, 1979). In the past, tenure and promotion were almost automatic, and institutions were not forced to make distinctions between generally competent instructors. However, enrollments have tapered off in recent years, and not only is there no longer a need to add additional faculty, retrenchment is often necessary. Reduced faculty mobility and severely limited college budgets have increased competition among instructional staffs for promotions and tenure. Under these conditions it is only natural that college administrators wish to find instruments which will serve the following goals: (1) to provide an objective basis for decisions on academic rank, tenure, and pay; (2) to provide a basis for self-improvement for the teacher; (3) to provide information on research on teaching (Doyle, 1975).

Demands to upgrade instruction have been voiced by students, parents, and public officials (Centra, 1979). Many parents are not sure that the effectiveness of instruction warrants the high cost of a college education, and legislators are pressing public institutions to become more accountable. Students have become more aggressive, and have brought litigation against institutions. These cases have questioned both adequacy of courses offered and the competency of instruction.

As Centra (1975) points out, many faculty have resisted evaluation. Perhaps no area of evaluation is more bitterly resisted than is student evaluation of instruction. Aleamoni (1974) lists eight concerns faculty have regarding student evaluations. One of these concerns is the degree to which a student's grade will affect the faculty member's evaluation. Rodin and Rodin (1972) have even suggested that teachers who instill the greatest knowledge in their students are the ones most heavily penalized by student evaluations.

Despite legitimate faculty concerns pertaining to student evaluations the practice has become quite widespread among U.S. colleges and universities. Whittington (1983) reports that student evaluations occur in 90 percent of the institutions of higher education. It is of particular importance in Massachusetts community colleges as 30 percent of the summary evaluation is derived from student evaluations (Collective Bargaining Agreement, 1980).

It is hoped that the results of this study will stimulate research which can serve to assist those attempting to develop or revise standardized and validated student evaluation forms.

The results of this study suggest a new line of research which might assist in explaining some of the discrepancies noted in the literature pertaining to grades and faculty evaluations. If this relationship can be substantiated and clarified then it will be possible to control for this variable in standardized evaluations.

Hopefully this study will aid in clarifying the relationship between cognitive styles and student evaluations. This need has been expressed by a number of investigators (Aversano, 1976; Pettman, 1976; Gaeta, 1977; Self, 1983).

Delimitations

The following delimitations are noted:

1. This study examines one possible variable in the evaluation of faculty by students. It does not examine the reliability or validity of student evaluations in general.

2. This study does not examine the possible interactions of variables such as cognitive style match/mismatch, class size, time of day, etc.

3. Generalizations derived from this study may not be appropriately applied to populations at other institutions because the sample in this study is from one institution.

4. The results of this study may be affected by the fact that the Massachusetts Community College Student Evaluation Form is not a validated instrument.

5. A possible source of experimental error is that students, aware that they are participants in a study, may consciously or unconsciously attempt to influence the study.

CHAPTER II

REVIEW OF THE LITERATURE

Cognitive Styles in General

The term cognitive style may be defined as individual differences in perceiving and processing information (Self, 1983). The senses are constantly bombarding the individual with a variety of stimuli which must be interpreted, organized, structured into patterns, related to past experiences, and the pertinent separated from that which is not important. Cognitive style determines the manner in which these events will be accomplished.

While the above definition identifies cognitive style as an internal property of the individual, it should be noted that cognitive styles have historically been approached ecologically (Ridgeway, 1977). From an ecological point of view, cognitive styles may be regarded as the perceptual and information-processing aspect of the larger system of behavior evolved by the individual as his/her strategy of responding to environmental demand. Thus, all aspects of human behavior are to some extent concerned with cognitive style. This observation leads Witkin et al. (1977) to make the following comment:

> ...cognitive styles are pervasive dimensions. They cut across the boundaries traditionally--and, we believe, inappropriately--used in compartmentalizing the human psyche and so help restore the psyche to its proper status as a holistic entity....

Witkin (1959) clearly differentiates between style and intelligence. Cognitive style is the approach rather than the capacity to solve problems. Cognitive styles are concerned with the form rather than the content or quality of cognitive activity (Witkin et al., 1977).

Each cognitive style has its own adaptive value which suggests that the value of any style is to a large extent determined by the environment in which an individual finds himself-herself. Research has indicated that individuals make career and academic choices based on cognitive preference (Arbuthnot and Gruenfeld, 1967; Chung, 1969; Goodenough et al., 1979). Thus, suggesting that people tend to gravitate toward environments which provide the best cognitive adjustment. Therefore, it is not proper to value one cognitive style over another. Witkin et al. (1977) summarize the relative nature of cognitive styles as follows:

> ...To have more of an ability is better than to have less of it. With cognitive styles, on the other hand, each pole has adaptive value under specified circumstances, and may be judged positively in relation to those circumstances....

Questions still exist as to the exact mechanism by which an individual acquires cognitive preferences (Witkin and Berry, 1975), however it is quite clear that these preferences develop early in life (Witkin and Goodenough, 1977). Studies with children have demonstrated that once a cognitive style has been acquired it tends to remain stable over long periods of time (Witkin, 1959). This, however, does not mean that styles are immutable (Witkin et al., 1977). Cognitive styles can and do change, and it has been suggested that it might be possible to

change them by intent, through education (Ellicott and McMichael, 1963). However, basically individuals will exhibit the same style year after year.

It has been noted that the concept of cognitive styles has many dimensions (Cross, 1976). However, since this study deals with only one aspect of cognitive style, field-dependence and independence, only material pertinent to this area will be considered in this review of the literature. Following is a summary of the development of the concept of field-dependence/independence in detail.

The Concept of Field-Dependence and Field-Independence

Over the past three decades the concept of field-dependence/independence (FD/FI) has been under investigation by a number of psychologists and educators. It is the most intensively studied dimension of cognitive self (Self, 1983). This work has revealed a great deal of information pertaining to behavior of FD/FI individuals. This section will focus first on the discovery of the concept, and then consider the behavioral characteristics identified with each of the two types of cognitive styles.

The concept of field-dependence/independence originated from the early work of Herman A. Witkin which was concerned with the location of the upright in space (Witkin, 1949, 1950, 1952). Witkin asked the question, "How do people determine the upright?" (Witkin, 1959). He had observed that people have little difficulty in holding their bodies straight, or in adjusting objects outside of their bodies to a true

upright position. Three possible hypotheses occurred to Witkin. The first possible answer was that individuals rely on their internal feelings. Gravity pulls on the body and humans, feeling this influence, respond appropriately. A second possibility was that humans use the visual field to determine their position. The third tentative answer was that both of these factors are utilized in determining the upright.

To establish which of these factors was most probable, two experiments were designed. In his first experiment Witkin intended to separate the gravitational standard of the upright from that of the visual field. His aim was to determine the importance of each. The apparatus employed in the first experiment consisted of a small room which could be tilted a number of degrees either to the right or left. Care was taken to insure that the structure and interior decoration of this room provided a number of vertical and horizontal clues. In the room was a chair which could also be tilted to the right or left. This chair was rotated to a position slanted in relation to the room.

A subject was seated in the chair and told to adjust the chair until it was in a completely upright position. The subjects made the necessary adjustments, which were observed. If the person did indeed adjust the chair to the true upright, it could be inferred that he/she perceived body position on the basis of sensation from within. Conversely, if the individual tipped the chair toward the axes of the tilted room, it could be assumed that the subject determined body position mainly by using referents from the environment (the visual field).

At first, the results of this test seemed inconclusive. Some of the subjects were always able to place the chair upright regardless of

the slant of the room. Other subjects adjusted the chair so that it was "straight" in reference to the surrounding room. To complicate the matter, other people adjusted the chair varying degrees between the true upright and the tilt of the room. However, it was noted that there was a consistency in the repeated performances of subjects. Witkin concluded that apparently some individuals used internal feelings to adjust to the upright, others employed the visual field, and some relied on both to achieve their orientation in space.

The second experiment designed to gain data on this topic involved the ability to straighten, or adjust to the upright, an object other than one's own body. In this test the subject sat in a darkened room facing a luminous rod in a glowing frame. The rod and frame could be moved independently of each other. The subjects were directed by the investigator to move the rod until it was straight up.

Witkin hypothesized if the subject relied on the visual field to adjust the rod the rod would be tipped toward the tilt of the frame. Conversely, if the subject placed the rod in an upright position without regard to the frame then it would be inferred that gravity was the standard of reference.

The results of the rod and frame test were similar to the previous experiment. It appeared that some individuals relied on gravity and others used the visual field to position the rod. Again, there were some subjects who seemed to use both types of referents. Interestingly, the subjects seemed to be consistent. Those who used visual referents in positioning their bodies also used visual referents positioning the

rod, and those who relied on gravity for the orientation of the body also used gravity in positioning the rod.

From these experiments it was possible to identify two types of individuals. Those who relied on the visual field to recognize the upright (field-dependents), and those who could orient themselves without recourse to the visual field (field-independent).

This early research on field-dependence/independence made use of a third test which, in the long run, proved to be more important to subsequent research than the original experiments. It was noted that field-independent subjects had the ability to identify simple geometric figures hidden in a more complex figure (Witkin et al., 1977). While While this task does not involve perception of the upright it does have an important factor in common with the other two situations. Each of these tests provides a quantitative indicator of the extent to which the surrounding organized field influences the person's perception of an item within it.

This important discovery led to the development of more simplified methods of identifying the degree of FD/FI of an individual. Researchers in the area have now replaced dark rooms and complex gadgets with embedded-figures tests. Embedded-figures tests now exist for preschool children (ages 3-5) and children 5-9, as well as for adults (Coates, 1972; Witkin et al., 1971). The ease with which these tests are administered combined with a relatively low cost have seemingly stimulated research on FD/FI. By the end of August 15, 1974 over two thousand papers existed on the subject (Witkin et al., 1974). Numerous other

papers have been published since that time, making FD/FI the most investigated aspect of cognitive style.

Subsequent research has related disembedding ability in perception to disembedding ability in intellectual activities and disembedding ability in both domains to structuring competence in both activities (Witkin and Goodenough, 1977). This observation led Witkin and his colleagues to the following conclusions:

> To analyze and structure fields is to show articulated cognitive functioning as a characteristic approach to the field; to follow the field as given is to use a global approach. This greatly enlarged individual-differences dimension was conceived as an articulated versus global field approach dimension, and was designated a cognitive style (Witkin et al., 1979).

In order to accommodate new findings, in 1962, Witkin and his coworkers developed the concept of differentiation (Witkin & Goodenough, 1977). The main feature of psychological differentiation is segregation of self from non-self. This means that boundaries have been formed between inner and outer; particular attributes are identified as one's own and recognized as being distinct from those of others. This implies that what lies within and constitutes the self is articulated, that is, one in which components of the individual are experienced as discrete and joined into a bounded whole. Witkin and Goodenough (1977) hypothesize that individuals who experience themselves as separate and distinct from the field are more likely to rely on internal referents while those with a less delineated self place reliance on external referents. Thus, the disembedding skill of field-independents may be explained as follows:

> Whether a person tends to rely primarily on external referents or to be self-reliant may influence development of his manner of processing information from the field--specifically, whether he will restructure the field on his own, or accede to its dominant properties. A person who functions less autonomously would appear likely to adhere to the field as given in dealing with cognitive restructuring tasks. A more autonomous person may be more likely 'to go beyond the information given,' when this is required by situational demands or inner needs (Witkin and Goodenough, 1977).

It has been noted in the literature that FD individuals have a more interpersonal orientation than do FIs (Witkin and Goodenough, 1977). The following social characteristics have been identified for FDs: (1) compared to field-independent people, field-dependent people favor social situations over solitary pursuits (Coates et al., 1975); (2) they prefer to be physically close to others in an interaction situation (Green, 1976); (3) they are selectively attentive to social situations (Fitzgibbons et al., 1964); (4) they are open in expressing their feelings and thoughts (Green, 1976); and (5) more considerate and attentive to others (Elliott, 1961). These behavioral characteristics seem likely to provide the FD person with information about what others may be feeling and thinking, and as a result add up to greater interpersonal competencies (Witkin et al., 1979). Witkin and Goodenough (1977) use the differentiation hypothesis to explain these observations as follows:

> Field dependence-independence, conceived as an expression of the self-nonself aspect of differentiation, has obvious implications for interpersonal behavior. Experience of one's own self as separate and distinct from that of others and, with it, reliance on internal referents, are

> likely to make for autonomy in social relations. In contrast, a less delineated self and primary reliance on external referents limit personal autonomy. Whether internal or external referents are given greater emphasis affects, in turn, the individual's orientation toward the main source of external referents--other people.

Another important aspect to the differentiation hypothesis is that individuals who demonstrate a greater self-nonself segregation also represent a more highly differentiated psychological organization (Witkin et al., 1979). This phenomenon has been demonstrated from both a physiological and psychological point of view.

Studies attempting to relate right or left brain dominance to FD/FI have suggested that hemispheric dominance is not related to one style or the other. However, it has been demonstrated that both hemispheres of field-independent individuals are more highly specialized than are those of field-dependents. This has been illustrated through the use of electroencephalograms. EEG recordings from the right and left brain of field-dependent individuals were more similar than the wave patterns from the right and left brain of field-independent subjects. Thus, suggesting that the right and left hemispheres of field-independents perform more dissimilar tasks than do the hemispheres of field-dependents.

The greater differentiation of field-independents is further suggested by the segregation of psychological functions. A major manifestation of differentiation is specificity of activities and experiences. Specialization is signified by the development of specialized defenses for dealing with potentially disturbing experiences. If the

differentiation hypothesis is correct it would be expected that field-dependent people would demonstrate relatively unspecialized defenses while field-independent individuals would demonstrate more specialized defense mechanisms. These expectations have been realized. Field-dependent mode of approach has been associated with relatively generalized defensive strategy, such as repression and denial. In contrast, the field-independent mode of approach has been correlated with more specialized defense mechanisms, such as isolation, intellectualization, and projection.

The preceding historical approach to FD/FI has been taken to illustrate the general nature of this cognitive domain. The following sections of this review will attempt to focus on information directly related to this study.

Cognitive Style and Student Evaluation of Faculty

Interest in the effects of cognitive style on student evaluation of faculty results, for the most part, from the work of DiStefano (1969) and James (1973). The results of these studies suggested that students and teachers with similar cognitive styles like each other better and find people with styles similar to their own more competent.

DiStefano's research involved 28 male high school teachers and 110 male high school students, grades 10-12. The mode of field approach, for both students and teachers, was determined by using the long form of the Embedded Figures Test. He used a description questionnaire to collect the interpersonal perceptions of the subjects. From the results he drew the following conclusion:

> People with similar perceptual styles (as measured by the EFT) tend to describe each other in highly positive terms, while people whose perceptual styles are different have a strong tendency to describe each other in negative terms (DiStefano, 1969).

In James' study the subjects consisted of 22 black female high school students and 4 black male high school teachers. A Portable Rod and Frame Test was used to determine the mode of field approach of the 4 teachers. The Group Embedded Figures Test, and the Articulation of Body Concept Test were used to identify the cognitive style of the 22 students. One half of the sample was classified as field-dependent and the other half as field-independent. The students were asked to rate the personal characteristics of their teachers and the teachers were asked to rate the students. The findings of James were similar to those of DiStefano (1969). It was concluded that teachers and students with similar mode of field approach exhibited a more interpersonal attraction (Self, 1983).

The results of these two studies suggested the possibility that cognitive style might play a role in student evaluation of faculty. A number of studies have investigated this possibility (Spindell, 1975; Aversano, 1976; Pettman, 1976; Gaeta, 1977; Self, 1983, Wittington, 1983). The results of these studies are about equally divided as to positive and negative results.

Authors reporting clear match/mismatch impacts on student ratings of faculty were Self (1983) and Wittington (1983). It should be noted that the Self (1983) study reported that FD students gave FD faculty higher ratings than FI students gave the same FD teachers. However,

there was no significant difference between FD and FI students in the ratings given FI instructors. Thus, suggesting that the match/mismatch phenomenon is restricted to the FD end of the continuum. Aversano (1976) concluded that the FD/FI characteristic of students may play a minor role in student ratings of certain instructor characteristics.

It should also be noted that in addition to cognitive style match/mismatch effects, Aversano (1976) also considered the impact of grades on student ratings. However, it does not appear that he considered the possibility that FD and FI students may respond differently to grades in the rating of faculty.

The work of Pettman (1976) must be classed as having negative results in that he failed to find any significant correlation between cognitive style and student rating of instructors. However, his data did suggest to him that the relationship between FD/FI and the rating of faculty was more complex than was anticipated. The inconsistencies found in the literature further support this as a possibility.

Mode of Field Approach and Handling of Hostility

In Chapter One it was noted that field-dependent individuals were less likely to express hostility toward other people than field-independents. This generalization may be drawn from two sources. First, the differentiation hypothesis of Witkin and his colleagues (1979) proposes a network of associations between degree of articulation of perceptual experience and differentiation of other types of

experiences such as body concept, sense of identity, and defenses. Since the field-dependent individual has a low level of articulation it would be expected that such a person would show primitive behavior such as massive repression and hostility turned inward. A more highly differentiated individual (field-independent) would demonstrate such defenses as isolation, projection, and hostility turned outward.

A second source is to examine the research which has been done in the area. There have been three approaches to the study of expression of hostility as a function of cognitive style. One approach has been to use the Defense Mechanism Inventory developed by Gleser and Ihilevich (1969). This technique has consistently shown that field-independent people are prone to use "turning against objects" as a characteristic defense while field-dependent subjects are more likely to turn against self (Witkin and Goodenough, 1977). Since this type of study has produced the most positive results it will be considered first. This approach is well illustrated by Ihilevich and Gleser (1971).

Subjects for the Ihilevich and Gleser study (1971) were drawn from 110 psychiatric patients (50 males and 60 females). The subjects were first given the Defense Mechanisms Inventory (DMI). This inventory was designed to measure the relative intensity of usage of five major groups of defenses. This device consists of ten brief stories, two per conflict area. The story is followed by four questions designed to identify the subjects' actual behavior, fantasy behavior, thoughts, and feelings in the situations described. Five responses typifying the five defenses are provided from which the subject selects the one most

representative and the one least representative of his/her reaction. It should be noted that reliability and validity studies have indicated that this test is a useful instrument for assessing defense mechanisms.

The subjects were then given the Embedded Figures Test (EFT), and the Figure Drawing Test (FDT) to determine their mode of field approach. The data were then analyzed to determine if significant differences could be found between field-dependent and field-independent subjects as to preferred defense mechanisms. The results of the study did support the hypothesis that field-dependent people tend to direct aggression toward self while field-independent individuals are more likely to direct hostility toward external sources.

A second approach to the study of hostility and its relationship to cognitive style is to give FD and FI subjects the opportunity to act against another person (Witkin and Goodenough, 1977). These experiments are usually designed to evoke hostile feelings, and observations are made to determine the response of subjects. A number of studies have been conducted using this method (Greenfield, 1969; Bercovici, 1970; Dengerink et al., 1975). Witkin and Goodenough (1977) summarize the results of these studies as follows:

> In these studies, which allowed assessment of outwardly directed hostility from manifest behavior, field-independent subjects showed themselves more likely to act in hostile fashion against another person than did field-dependent people....

A third approach to this line of research is studies that examine manifestations of hostility in creative verbal productions (Witkin and Goodenough, 1977). In one study of this type Goodenough et al. (1974)

examined dream reports collected in the laboratory from FD and FI subjects. The results of this study failed to support the hypothesis that field-independent subjects are more likely to express hostility against another person than are field-dependent subjects.

In another study of the verbal type Witkin et al. (1968) applied the Gottschalk-Geser assessment procedure to transcripts of verbal productions of subjects during therapy. As the investigators expected, transcripts of field-independent patients contained significantly more expressions of "hostility-out" than did transcripts of field-dependent patients.

From the standpoint of both theory and research it appears reasonable to assume that if students do use faculty evaluations to retaliate against their instructors it would be field-independent students who would do so. Thus, it seems to be appropriate to consider the question, "Do the grades students receive affect the evaluations they give faculty?" The final section of this chapter will consider that question.

Grades and Student Evaluation of Faculty

As noted in the previous chapter, the literature reveals conflicting results with respect to studies concerned with the question of whether grades have any effect on the evaluation of faculty by students. Costin et al. (1971) noted thirteen studies carried out between 1928 and 1960 which found no relationship between grades and ratings of teachers. Yet, these same studies also report twelve studies conducted between 1953 and 1970 which report positive results. A number of other

studies have also reported incompatible results (Aversano, 1976). These discrepancies have caused authors in the area to pay particular interest to experimental design.

One of the early investigators in this area was H.H. Remmers (1928, 1930). Remmers' subjects consisted of 409 students rating 11 different teachers in 17 different classes. He used the Purdue Rating Scale as the instrument of evaluation. Remmers reached the following conclusion:

> ...the average of all correlations is +.070 at most. The conclusion seems inescapable, therefore, that for the average instructor and the average student there is practically no relationship between the student's grades and his judgment of the instructor... (Remmers, 1930).

While this study is frequently cited, Rodin and Rodin (1972) suggest that Remmers misinterpreted his data. These authors state that contrary to the claim usually attributed to them, Remmers' data seem in fact to indicate that there is some relationship between grades and evaluations. They state that Remmers' approach of taking the average correlation over traits and instructors is like characterizing the motion of a pendulum as zero because the two directions cancel each other out.

The Rodin and Rodin (1972) study which reported a strong correlation between grades and student ratings was in turn criticized by Frey (1973). They were criticized on four points: (1) failure to report transfers and withdrawal; (2) the small sample size of the study; (3) the rating measure which required the student to make a global

judgment about teachers; and (4) the use of an unusual criterion measure of student achievement. They measured student achievement on the number of types of problems students mastered one by one.

Frey (1973) eliminated the weaknesses of the Rodin and Rodin study (1972) and performed his own investigation. The results of Frey's work were negative, and he concluded that grades did not affect student rating of faculty.

It has been suggested that the inconsistencies in the literature result from methodological dissimilarities among studies (Phutinart, 1982). One such difference is that in some studies grades were awarded prior to the students' evaluation of their instructors (Bendig, 1953; Remmers, 1960; Brown, 1976), and in other studies grades were awarded after the evaluation (Weaver, 1960; Garverick & Carter, 1962). Research has suggested that this may not be a pertinent consideration as investigations using both approaches have resulted in similar results (Phutinart, 1982).

Another dissimilarity in methodology is the difference in unit of analysis. Howard and Maxwell (1980) suggest that the inconsistencies in the literature vanish rapidly if one considers only class mean rather than individual students as the unit of analysis. Most of the investigations finding weak relationships between grade and student rating employed the data of individual students as unit of analysis.

Studies have indicated that grades are more strongly associated with evaluation in some classes, while only weakly correlated, or not at all, in other classes (Yonge and Sassenrath, 1968; Weigel et al.,

1971). The results of these and similar studies have led Feldman (1976) to state that the important task is to find out the conditions under which grades in a class can be expected to be positively associated with student evaluation. It is hoped that this study may provide some insight in identifying some of these conditions.

CHAPTER III

DESIGN OF THE STUDY

Subjects

The subjects for this study were students at a comprehensive community college serving the urban population in the Boston area. At the present time the student population of this college is approximately 2,900. Subjects were drawn from three different academic departments; science, communications (language), and computer programming. These areas were selected as they seemed to offer the best prospects for obtaining a random sample of the college population.

Once the courses were selected the instructors were approached and asked to participate in the study. The purpose, hypothesis, and approximate class time required for the study were carefully explained to each professor. All of the teachers seemed to understand the merit of the study, and agreed to participate. After faculty approval had been obtained, a visit was made to each classroom, and students were asked to participate in the study. The students were told the type of information which was to be collected, the amount of time involved, the purpose of the study, how the data might be used, that they could withdraw at any time, and assured that all data would be confidential. However, students were not told the exact nature of the hypothesis being tested. In compliance with University regulations regarding human experimentation, each faculty and student participant was requested to sign a consent form (see Appendix A). It should be noted that no faculty member

or student who was asked to participate in the study refused to do so, nor did any withdraw from the study. However, for various other reasons, complete data sets were collected from only 205 of the 220 subjects who were originally tested.

It has been suggested by Aubrecht (1979) that one reason studies correlating grades and student ratings of instructors report relatively low correlation coefficients is that data are pooled across a number of classrooms. Research has also shown that three factors which tend to influence student evaluations are: (1) class size, (2) subject content, and (3) whether a course is required or an elective (Feldman, 1978). However, in this study these factors were controlled statistically.

Instrumentation

The instruments used in this study were the Group Embedded Figures Test published by Consulting Psychologists Press and the Student Evaluation form currently in use in the Massachusetts Community College System.

The Group Embedded Figures Test (GEFT) was used to identify the degree to which a student is field-dependent/independent. The GEFT was developed by Oltman, Raskin, and Witkin, and is an adaptation of the Embedded Figures Test (EFT). The value of the GEFT over the EFT is that it may be given to groups while the EFT is administered individually (Witkin et al., 1971).

Witkin has reported a reliability estimate of .82 for the GEFT. This figure is consistent for both males and females. The GEFT has

been correlated to the EFT, and the following results were obtained:

males: validity coefficient = -.82

females: validity coefficient = -.63

The correlation coefficients are stated negatively because the tests are scored in reverse fashion.

The GEFT is a speed test which requires the subjects to trace hidden embedded figures in more complex figures. The test is divided into three sections: (1) a practice section with seven very simple figures and a two minute time limit, (2) a section with nine more difficult items and a five minute time limit, and (3) a second section with nine difficult figures and a five minute time limit. Only the last two sections are scored with one point given for each of the eighteen hidden figures traced correctly. Thus, it is possible to score from 0 to 18 on the test.

Scores for any large group of subjects will show a continuous distribution, and it is possible to place an individual into one of four quartiles (Witkin et al., 1971). The GEFT Manual suggests the following guidelines as a recommendation for placement:

Number Correct : GEFT

Quartiles	Men	Women
1	0-9	0-8
2	10-12	9-11
3	13-15	12-14
4	16-18	15-18

It should be noted that these norms are to serve only as a general guide for populations different from the population upon which the norms were based (Witkin et al., 1971).

The quartiles may be interpreted as follows: (1) Scores in Quartile 1 indicate a field-dependent mode of approach, (2) Quartile 2 suggests a relatively field-dependent designation, (3) in Quartile 3, individuals are considered relatively field-independent, and (4) those who are classified in the 4th Quartile are field-independent. In this study individuals with GEFT scores of 14 and above were designated field-independent.

The evaluation instrument used in this study is a product of the contract between the Massachusetts Board of Regional Community Colleges and the Massachusetts Community College Council (MCCC) (1980). Article 13 mandates that faculty evaluation will be a five-part process with student evaluations constituting thirty percent of the summary evaluation. The evaluation form presently in use was developed as a joint activity of the Board and the MCCC.

The Student Evaluation Form has not been validated. It consists of fourteen items to be rated. Students are given five options from which to choose: excellent, very good, good, poor, and unsatisfactory. The administration, in processing the responses, assigns a numerical value to each choice. Scores for a single item may range from a high of 5 to a low of 1. The ratings for the fourteen items are totaled and a mean for each class is determined.

Data Collection

During the fifth week of classes in the spring, 1984 semester, the participants were administered the GEFT. Experience suggested that class membership would be stabilized at this time. The students were asked to evaluate their instructors during the thirteenth week of the semester. This week was chosen to administer the evaluation because it coincides with the time frame in which the official evaluations are collected in the fall semester. The final grades of the student subjects were obtained in numerical form from the instructor at the end of the semester. The literature has suggested that expected grades may have different effects on faculty ratings than do actual grades (Aversano, 1976). For that reason, at the time of evaluation students were asked to indicate the grade they expected to receive in the course.

In order to help preserve the anonymity of the students, they were asked to place the last four digits of their social security number, rather than their names, on GEFT booklets and faculty evaluations. The faculty were also asked to submit final scores with the last four digits of the student's social security number.

Data Analysis

The raw data were then entered into a TRS-80 Model I computer. It was sorted according to cognitive style and stored on a floppy disk. Each record in the file contained the individual's cognitive style, sex, expected grade for the course, final raw score received, and each response to the fourteen items on the faculty evaluation form. Since

the items on the faculty evaluation form are not in a numeric format, it was necessary to convert them into numbers. This was done as follows: (1) excellent equals five, (2) very good equals four, (3) good equals three, (4) poor equals two, and (5) unsatisfactory equals one.

Four tests were run on the data. In the first test the data were processed as follows: (1) a mean faculty evaluation score was obtained for each student, (2) a mean faculty evaluation score was calculated for the entire student sample, (3) a mean score was computed from the final scores submitted by the faculty, (4) a standard deviation was calculated for both scores and faculty evaluation, (5) using these data, raw final scores and faculty ratings were converted into z scores. The number of field-dependent and field-independent students was also determined at this time, and this information, along with both z scores for each individual was stored in a disk file. It was felt that the z scores were necessary to accommodate for faculty variations in grading and the variables in evaluation which were noted previously.

The data were then processed by a BASIC translation of the Analati program of Dowaliby & Berliner (1971). This program utilizes the Johnson-Neyman technique and allows for optional use of the Potthoff modification.

The Johnson-Neyman technique is a regression approach which provides more useful information about interactions than does simple regression analysis or analysis of variance. In simple regression, lines for the groups are fitted through the data and interaction is indicated when two or more regression slopes are not parallel. However, in

addition to this, the Johnson-Neyman technique identifies the regions of significance for any two non-parallel regression lines. The Potthoff modification provides for "simultaneous" regions of significance. For example, if p=.10, it can be stated with 90 percent confidence that the two groups are different simultaneously for all points in the region of significance (Dowaliby & Berliner, 1971). The Potthoff option was utilized in this study. P=.10 was the acceptable probability level. Potthoff (1964) considers this very reasonable for those who would normally use the .05 level with the more common statistical procedures.

In the second test z scores were obtained for the individual faculty evaluations. However, this time they were correlated with the expected grade. As it was not reasonable to request numerical grades from the students, they were asked to report the information in letter form. When the original raw data file was created these letters were entered as grade points earned (A=4, B=3, C=2, D=1, and N=0). Since these scores represented absolute values it was not considered necessary to convert them into z scores. As before, these data were then processed by the Analati program.

The third test was concerned with final scores and specific faculty characteristics as measured by the evaluation. Hildebrand et al. (1971) have identified basic components or scales of effective teaching, and placed these individual items into related groups. These are as follows:

Scale 1. Analytic/Synthetic approach is related to breadth, analytic ability, and concept understanding.

Scale 2. Organization/Clarity is related to skill at presentation, but is subject-related not student-related.

Scale 3. Instructor-Group Interaction is related to rapport with class as a whole.

Scale 4. Instructor-Individual Student is related to support between instructor and individual student.

Scale 5. Dynamism/Enthusiasm is related to excitement for subject matter, and pleasure in teaching.

An attempt was made to sort the items on the community college evaluation instrument used in this study into these five categories. Item 7 was placed in the Scale 1 category. Items 1-6, 11, 13, and 14 fell into the Scale 2 group. Item 9 and 10 were placed in the Scale 3 classification. Item 12 was identified with Scale 4.

A z score was calculated for each student in all of the identified scales. The raw final scores for each student were also converted into a z score. The z score for individual raw score and z score for each evaluation cluster were then tested with the Analati program.

The fourth test was similar to the third except that z grades were paired with expected grades.

In addition to the four tests described above, a correlation coefficient between expected and actual grade received was calculated.

CHAPTER IV

RESULTS

The population of this study was almost equally divided between males (N=97) and females (N=108) resulting in a total population of N=205. All of the subjects completed the GEFT. The mean GEFT score for males was 10.2 with a standard deviation of 5.8. The number of field-dependent males was N=69 and field-independent males N=28. The range and frequency of male GEFT scores may be been in Table 1.

Table 1

MALE GEFT SCORES

GEFT Score	N	GEFT Score	N
0	8	10	0
1	0	11	8
2	10	12	6
3	2	13	16
4	0	14	6
5	6	15	4
6	3	16	2
7	2	17	6
8	4	18	10
9	4		

The mean GEFT for females was 7.74 with a standard deviation of 4.41. Of the total female sample, 92 were identified as field-dependent and 16 as field-independent. The range and frequency of female GEFT scores may be seen in Table 2.

Table 2

FEMALE GEFT SCORES

GEFT Score	N	GEFT Score	N
0	2	10	14
1	6	11	0
2	8	12	6
3	6	13	2
4	8	14	4
5	6	15	2
6	16	16	6
7	4	17	4
8	6	18	0
9	8		

The total sample consisted of 161 individuals placed in the field-dependent catagory, and 44 field-independents. The combined mean GEFT score was 9 with a standard deviation of 5.3. Range and frequency of combined GEFT scores may be seen in Table 3.

Table 3

GEFT SCORES FOR MALES AND FEMALES

GEFT Score	N	GEFT Score	N
0	10	10	10
1	4	11	8
2	18	12	12
3	8	13	18
4	8	14	10
5	12	15	8
6	18	16	9
7	6	17	10
8	10	18	10
9	12		

In the first test of the hypothesis, z scores derived from students' final raw scores and z scores calculated from the faculty evaluation instrument were analyzed using the BASIC translation of the ANALATI

program of Dowaliby and Berliner (1971). Group 1 was composed of students who scored below 14 on the GEFT (field-dependent). Group 2 consisted of students who scored 14 or above on the GEFT (field-independent). The z-score was the independent variable (X) and the z evaluation the dependent variable (Y).

For Group 1 (field-dependent) the mean z-score was found to be -.09 with a standard deviation of .99. The mean z-evaluation was .05 with a standard deviation of .98. A correlation coefficient of r=.34 was found for Group 1. The coordinates for the regression line were X=-3.32, Y=-1.03 and X=1.28, Y=.52.

Group 2 (field-independents) had a mean z-score of .36 with a standard deviation of .98. The mean of Y=-.199 with a standard deviation of 1.06. This group had a correlation coefficient of r=.65. The coordinates for the regression line were X=-1.53, Y=-1.53 and X=1.28, Y=.45. These lines may be seen in Figure 1.

The regression slopes for Group 1 (field-dependents) and Group 2 (field-independents) were found to be significantly non-parallel. A region of non-significance (Alpha=.1) was found to exist between X=.53 and X=15.9 with the point of non-significance being X=1.46. One hundred forty-four or 69.2 percent of the cases fell in the region of significance. It should be noted that the region of non-significance extended well beyond the actual range of X. The results of this test may be seen in Figure 1.

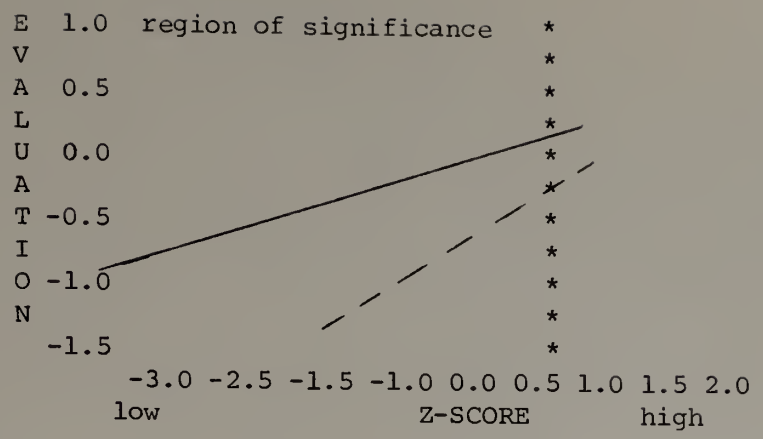

Figure 1. Results of the application of the Johnson-Neyman Technique with the Potthoff Modification to z scores derived from the global evaluation score and z scores computed from final score (Alpha= .1). Field-dependent students represented by the solid line. Broken regression line represents field-independents.

In the second test of the hypothesis, the ANALATI program was again used to regress the dependent variable (evaluation z scores) on the independent variable (expected grade). As before, the students were divided into two groups with the field-dependents placed in Group 1 and field-independents in Group 2.

The mean expected grade for Group 1 was X=2.7 with a standard deviation of .91. The mean and standard deviation of Y were the same as described earlier in the first test of the hypothesis. A correlation coefficient of r=.41 was found between expected grades and faculty evaluation z score. The coordinates for the regression line were X=0, Y=-1.14 and X=4, Y=.64.

The mean of X for Group 2 was X=3.4 with a standard deviation of .9. The correlation coefficient between the two variables was r=.44.

The coordinates for the regression line were X=2, Y=-1.99 and X=4, Y=.11.

This test did not result in the delineation of a region of significance. The data were processed three times with Alpha=.1, Alpha=.2, and Alpha=.3, yet in each case the results were negative. Thus, the slopes were not found to be significantly non-parallel. The regression lines for this test may be seen in Figure 2.

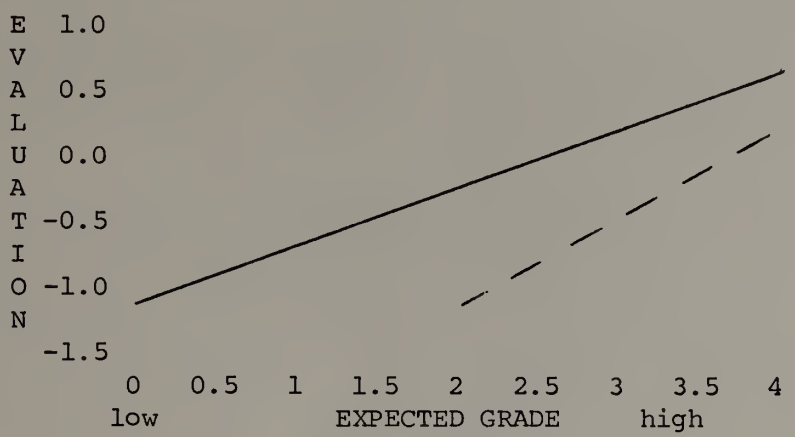

Figure 2. Regression lines for z evaluation scores and grade which the students expected to receive at the end of the semester. Field-dependent students are represented by the solid line and field-independent students by the broken line.

In order to determine how well the expected grade predicted the final raw score a correlation coefficient was calculated for each group. R=.62 was found to be the coefficient for the field-dependent group, and for the field-independent students r=.74. Both of these coefficients are significant below the p=.01 level.

The first test of the data examined the global impact of final grades on faculty evaluation. The third test considered the impact of

final grades on the rating of specific aspects of teaching. Individual items on the faculty evaluation form were placed into one of four scales as follows: (1) Scale 1=Analytic/Synthetic approach, (2) Scale 2= Organization/Clarity, (3) Scale 3=Instructor-Group interaction, and (4) Scale 4=Instructor-Individual interaction. Z scores were calculated for each of these scales. These data were then processed as in the first test of the hypothesis. The results of this analysis are reported in Table 4.

Table 4

RESULTS OF TEST 1

Scale	Group	Mean of X	Mean of Y	SD of X	SD of Y	r
1	1(FD)	-.096	.04	.98	.98	.18
	2(FI)	.36	-.15	.98	1.08	.37
2	1(FD)	-.096	.02	.98	.97	.32
	2(FI)	.36	-.07	.98	1.11	.59
3	1(FD)	-.096	.06	.98	.96	.14
	2(FI)	.36	-.36	.98	1.11	.39
4	1(FD)	-.096	.09	.98	.93	.40
	2(FI)	.36	-.33	.98	1.17	.72

Scale 1 pertains to the analytic/synthetic approach to teaching. When the z score for this item in the evaluation instrument was regressed on the z score for final score, the slopes of the two groups were not found to be significantly non-parallel. Thus, no region of significance was identified. The coordinates for the regression lines were as follows: (1) field-dependents X=-3.31, Y=-.54 and X=1.28, Y= .29; (2) field-independents X=-1.53, Y=-.93 and X=1.28, Y=.22. A graphic representation of these may be seen in Figure 3.

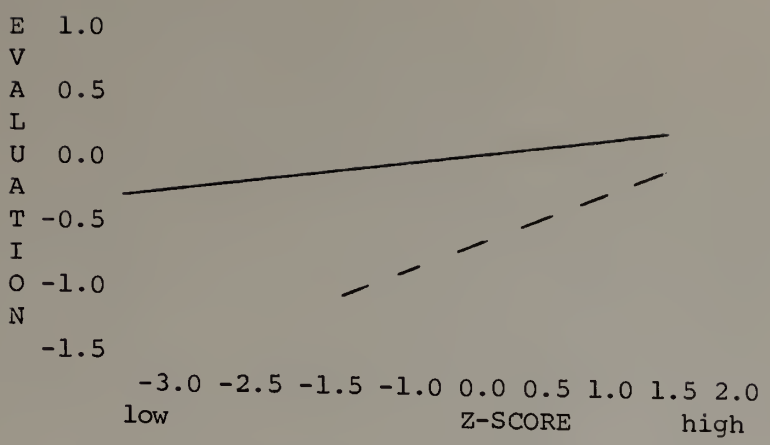

Figure 3. Results of the application of the Johnson-Neyman Technique with the Potthoff Modification to Scale 1 z scores and z scores for final raw score (Alpha=.1). Field-dependent subjects represented by solid line. The broken line indicates field-independent subjects.

Scale 2 is concerned with organization and clarity. Most of the items on the faculty evaluation instrument fall into this category. This test found the slopes for the two groups to be significantly non-parallel. A region of non-significance was identified between X=0.5 and X=20.10 (Alpha=.1). The number of cases falling below this region was 96 or 46.1 percent of the sample. It should be noted that the region of non-significance far exceeded the actual range of X. The coordinates for the regression lines were as follows: (1) field-dependents X=-3.32, Y=-.99 and X=1.28, Y=.45; (2) field-independents X=-1.53, Y=-1.34 and X=1.27 and Y=.54. An illustration of these lines may be seen in Figure 4.

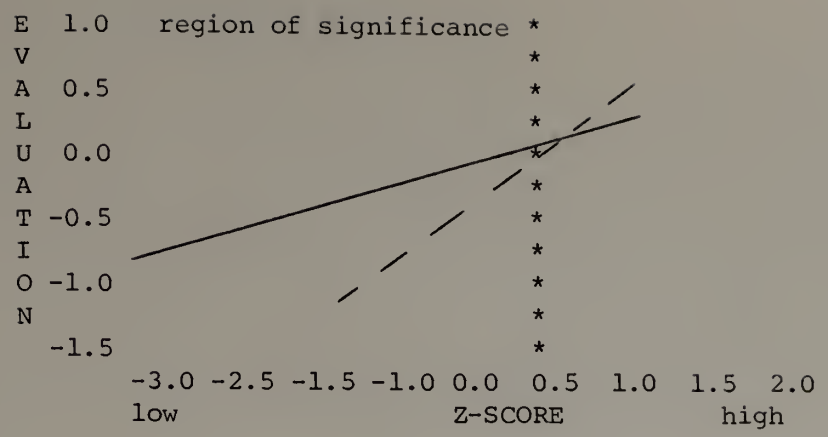

Figure 4. The results of the application of the Johnson-Neyman Technique with the Potthoff Modification (Alpha=.1) to Scale 2 z scores and z score for final raw score. Field-dependent students indicated with a solid line. Field-independent subjects depicted with broken line.

The items in Scale 3 are concerned with how well the instructor relates to the class as a whole. No region of significance was identified for the two groups with Alpha=.1 and Alpha=.2. However, when Alpha=.3 a region of non-significance was identified between X=.54 and X=11.2. The number of cases which fell into the region of significance was 144 which represents 69.2 percent of the sample. The coordinates for the regression line were as follows: (1) field-dependents X=-3.31, Y=-.4 and X=1.28, Y=.25; (2) field-independents X=-1.53, Y=-1.03 and X=1.28, Y=.2. These regression lines are plotted in Figure 5, and the region of significance is indicated with Alpha=.3.

The evaluation item placed in Scale 4 pertains to how well the faculty member interacts with individual students. The slopes for the two regression lines were found to be significantly non-parallel (Alpha=.1). The region of non-significance extended from X=.83 to

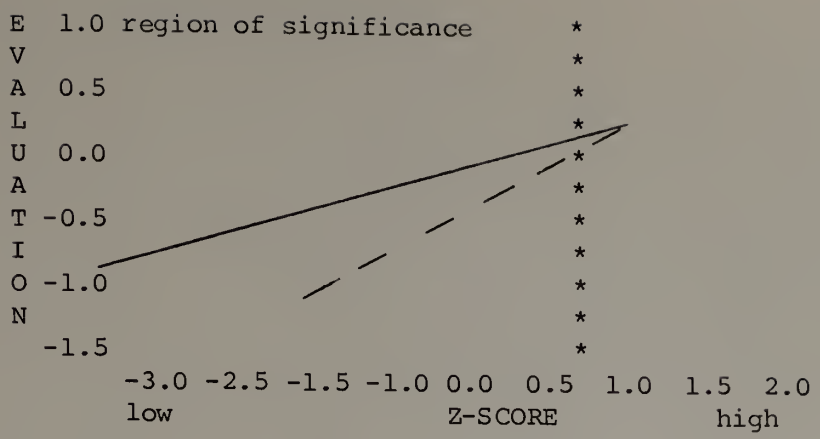

Figure 5. Results of the application of the Johnson-Neyman Technique with the Potthoff Modification (Alpha=.3) to Scale 3 z scores and z scores for final scores. Solid line represents field-dependent subjects and the broken line field-independent students.

4.45. As in the previous cases the region of non-significance extended beyond the actual range of X. The total number of cases falling in the region of significance was 160. This constitutes 76.9 percent of the cases. The coordinates for the regression lines were as follows: (1) field-dependent subjects X=-3.32, Y=-1.13 and X=1.28, Y=.61; (2) field-independent subjects X=-1.53, Y=-1.94 and X=1.28, Y=.46. The results of this test are graphically represented in Figure 6.

Test 4 considered the impact of the expected grade on rating of faculty on specific aspects of teaching. Again, in this test individual items on the faculty evaluation form were placed into one of four scales as follows: (1) Scale 1=analytic/synthetic, (2) Scale 2=organization/clarity, (3) Scale 3=instructor-group interaction, and (4) Scale 4=instructor-individual student interaction. Z scores were calculated for each of these scales. These data were then regressed on the expected grade. These tests were all negative in that none of the scales

produced significantly non-parallel regression slopes between the two groups. The results of these tests may be seen in Tables 5 and 6.

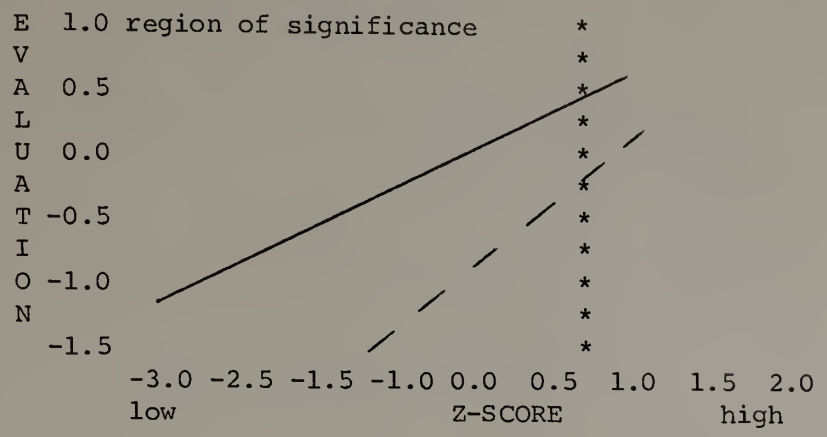

Figure 6. Results of the application of the Johnson-Neyman Technique with the Potthoff Modification (Alpha=.1) to z scores for Scale 4 and z scores for final score. Field-dependents are represented with a solid line and field-independents with a broken line.

Table 5

RESULTS OF TEST 4

Scale	Group	Mean of X	Mean of Y	SD of X	SD of Y	r
1	1(FD)	2.68	.04	.91	.98	.2
	2(FI)	3.4	-.15	.90	1.1	.28
2	1(FD)	2.68	.02	.91	.97	.43
	2(FI)	3.4	-.07	.90	1.11	.41
3	1(FD)	2.68	.15	.91	.94	.3
	2(FI)	3.4	-.55	.90	1.02	.3
4	1(FD)	2.68	.09	.91	.93	.3
	2(FI)	3.4	-.33	.90	1.17	.4

Table 6

COORDINATES FOR REGRESSION SLOPES FROM TEST 4

Scale	Coordinates for Group 1	Coordinates for Group 2
1	X=0,Y=.04 & X=4,Y=.32	X=2,Y=-.63 & X=4,Y=.05
2	X=0,Y=1.2 & X=4,Y=.62	X=2,Y=-.80 & X=4,Y=.23
3	X=0,Y=-.7 & X=4,Y=.48	X=2,Y=-1.02 & X=4,Y=-.36
4	X=0,Y=-.7 & X=4,Y=.48	X=2,Y=-1.06 & X=4,Y=-.02

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

The purpose of this study was to test the following hypothesis: Field-independent students use faculty evaluations as a mechanism to retaliate against faculty who assign them poor grades, but will not unfairly reward faculty who assign them good grades.

The subjects participating in this study were 205 students attending an urban community college. These students were selected from three different academic departments; science, communications (language) and computer programming.

The Group Embedded Figures Test (GEFT) developed by Witkin et al. (1971) was utilized to determine the degree of field-dependence/independence of the students. Each subject was also asked to evaluate faculty using the student evaluation form currently in use in the Massachusetts Community College system. At the time of the evaluation the students were also asked to indicate the grade which they expected to receive in the course. The students' final scores were collected from their professors at the end of the semester.

The data were then processed by a BASIC translation of the ANALATI program of Dowaliby & Berliner (1971). This program utilizes the Johnson-Neyman technique and allows for optional use of the Potthoff modification. The Potthoff modification was utilized in this study with p=.1 being the accepted level of probability.

Using these procedures four tests were run to test the hypothesis. In the first test faculty evaluation scores were regressed on the final scores of students. The results of this test supported the hypothesis.

In the second test of the hypothesis, evaluation scores were regressed on the students' expected grades. The results of this test failed to support the hypothesis though the results were in the predicted direction.

The third test of the hypothesis was concerned with final scores received by students and specific teaching characteristics as measured by the evaluation instrument. The evaluation items were placed in one of four scales, describing teaching characteristics as identified by Hildebrand et al. (1971) and z scores calculated for each scale. These scores and z scores derived from the students' final scores were then processed using the ANALATI program. The results of this test also supported the hypothesis.

The fourth test was similar to the third except that the scores for the four scales were regressed on expected grades. As with the second test, the results failed to support the hypothesis.

Discussion

In the first test of the hypothesis, field-dependent and field-independent students were compared on the basis of course scores and mean evaluation scores. If the results of this test indicated that the regression slopes for field-dependent and field-independent students were significantly non-parallel and a region of significance was

identified within the range of X, then the hypothesis would be supported. The slopes were found to be significantly non-parallel and a region of significance was identified below X=.53 (raw score of approximately 84). Field-independent students who received poor scores rated their instructor significantly lower than did field-dependent students receiving the same score and field-independent students receiving higher scores. This suggests that field-independent students were using the evaluation instrument in a vindictive manner.

In Test 2 evaluation scores were regressed on expected grades. It was expected that if the hypothesis were true that this test would produce results similar to those obtained in Test 1. However, in this case the two regression slopes were not found to be significantly non-parallel. Interestingly, significant correlation coefficients were obtained for both field-dependent (r=.41) and field-independent (r=.44) subjects. The similarity of these coefficients suggests that field-independent individuals are no more or less vindictive than are field-dependent individuals.

Test 3 investigated the possibility that field-dependent and field-independent students might differ in the value placed on specific aspects of teaching. The items on the evaluation instrument were placed in one of four scales and z scores derived from these scales were regressed on final scores. The results of this test resembled those of Test 1 in that a region of significance was identified for all scales except Scale 1 (Analytic/Synthetic approach). This indicated that specific rating items did not vary greatly from

the global evaluation. On all scales except Scale 1 field-independent students in the lower grade range rated the instructor significantly lower than did field-dependent students with the same grade or field-independent students with higher grades. As with Test 1 this test supported the hypothesis.

Test 4 resembled Test 3 except that in this case Scale scores were regressed on expected grades. In this test no region of significance was identified between the two groups on any of the scale items. These are not the results which would be expected if the hypothesis was true.

When the subjects rated their instructors, the students did not have knowledge of their actual grade. Thus, it is reasonable to assume that any vindictive behavior on the part of the students in this study would have to result from expected grades rather than from actual final scores. This suggests that the results of Test 2 should have greater weight in reaching a conclusion than those of Test 1. However, the results of Test 2 must be regarded cautiously. While the expected grade classes meet the minimum number of six as suggested by Freund (1973) it should be noted that the grouping of data into class intervals resulted in a loss of information (Ferguson, 1976). This could in itself account for the differences between the results of Test 1 and a less valid Test 2.

The results of Test 2 are even more questionable when the frequency distribution of the expected grades of field-independents are examined (see Appendix C). While correlation analysis is not restricted to normal distributions, it does assume that in all columns the

dispersions are approximately equal (Guilford, 1950). This is not the case for the data collected on field-independent subjects in regard to expected grades. No field-independent student anticipated a grade of D or N, and 65 percent of the sample indicated that they expected a grade of A. Thus, the results of Test 2 are at best questionable. Failure to find support for the hypothesis in the expected grade analysis can probably be best explained on technical grounds, however previous research does suggest another possible explanation. Research has related the ability to disembed hidden figures to disembedding skills in intellectual activities and to structuring competence in both activities (Witkin & Goodenough, 1977). Pettman (1976) found that field-independent high school students discriminated between traits of their instructor to a greater degree than did field-dependent high school students. This competence allows a field-independent to identify the source of his/her difficulty with course materials more readily than others with less disembedding skills. Conversely, a field-dependent student will respond to an item based on his/her global perception of the teaching process.

A number of investigators have reported that field-dependent subjects in general tend to rate other persons more highly than do field-independents (Aversano, 1976; Gaeta, 1977; Self, 1983). Gaeta (1977) offers two explanations for this phenomenon: (1) field-dependents tend to rate others toward the more positive pole rather than deciding upon a degree of choice; (2) field-dependents are more considerate toward others and have their perception colored by a halo effect in the rating of others.

It is reasonable to assume that a field-independent student with superior ability might find an instructional presentation quite clear and well organized because he/she understands it well, while a field-independent with less ability might fail to understand and feel that the material was poorly organized. Thus, the student most likely to make an A in the course will rate the professor high on organization and clarity while the less competent student will give a poor rating in that area. An instructor might spend much time unsuccessfully explaining a concept to a less competent field-independent eventually despairing, and as a result, receive a poor rating on the student evaluation in the area of faculty-student interaction.

If the above explanation is correct, then by controlling for ability, the strong correlation between field-independent grade and faculty rating should be moderated. While this study did not control for ability it should be noted that Frey (1973) did control for this factor in his study of students in Introductory and Multidimensional Calculus. If the literature is correct (Witkin et al., 1977) one would expect relatively large numbers of field-independent students in these classes. Yet, Frey (1973) failed to find any relationship between grades and ratings given faculty by these students.

It remains to be seen whether this explanation correctly explains the high probability that a field-independent's grade will predict the faculty evaluation score that individual gives an instructor. However, it is clear from the data that field-independents with a low grade will

give faculty members a lower rating then will field-independents with higher grades or field-independents with the same or higher grades.

As to GEFT scores, the subjects of this study very closely approximated the continuum which Witkin et al. (1971) predicted for the general population. However, as suggested by the literature (Goodenough et al., 1979), the subjects were not evenly distributed as to mode of field approach. Certain courses tend to attract more field-independent students than others, often in such numbers that they affect mean rating of faculty evaluations.

Another point which must be noted regarding the community college population and mode of field approach is the large number of field-dependent students. Cross (1976) suggests that the "New Students" are more likely to be field-dependent than traditional students. While this may be true, an examination of Witkin's chart establishing quartiles for mode of field approach suggests that there are simply more field-dependents in the world. Witkin et al. (1971) classify individuals with GEFT scores of 0 to 9 as strongly field-dependent. Assuming a continuum with an equal number of individuals in each of these divisions then over one-half of a normal population will be strongly field-dependent. Individuals with scores between 10 and 12 are classified as relatively field-dependent. Thus, it may be expected that in the general population, 68 percent will be field-dependent with 16 percent being relatively field-independent and 16 percent strongly field-independent. The distribution of GEFT scores obtained from the college investigated in this study suggests that the students

there represent a normal population in regard to mode of field approach. If this is true then it is reasonable to expect that field-dependent students should outnumber field-independent students. It is not that the community college attracts field-dependents, but by its open door policy, obtains a rather good random sample of the general population.

Conclusion

The following conclusion is restricted to the population studied, and no attempt has been made to generalize it to the general population.

If the data on the expected grades of field-independent students had been more consistent with the requirement of homoscedasticity it might have been possible to reject the hypothesis under consideration. However, because these data are abnormally skewed the negative results of Tests 2 and 4 must be viewed with caution.

While the final scores of field-independent students are positively skewed it appears that these scores do approximate homoscedasticity enough to produce valid results. Thus, the results of Tests 1 and 3 provide greater credence in reaching a conclusion. This being the case, the results of this study do not justify a rejection of the hypothesis. However, as the results of Tests 2 and 4 do not support the hypothesis, this study must be viewed as inconclusive.

Under the conditions of this study the mode of field approach does appear to play a significant role in faculty evaluation. Faculty who teach courses which attract large numbers of field-dependent students enjoy the benefit of inflated student evaluations. Conversely,

instructors with unusually large numbers of field-independent students may expect to receive a much lower mean evaluation score. Individuals teaching courses which attract a more normal population might be expected to receive evaluation scores falling somewhere between the two extremes.

As currently applied at the institution investigated in this study, the community college student evaluation form does not accomplish its intended purpose. The work of Self (1983) conducted at the same college found that field-dependent students tend to rate field-dependent faculty higher than field-independent faculty. Since the majority of students are field-dependent, faculty of the same style have an advantage in student ratings. The results of this study support the findings of other investigators that field-independent students in general tend to give lower ratings than do field-dependents (Aversano, 1976; Gaeta, 1977; Self, 1983). Thus, instructors in courses and programs which attract large numbers of field-independent students are at a disadvantage in competition with faculty in disciplines with large numbers of field-dependent students. Therefore, the instrument is not differentiating between good and poor teaching. It fails to meet the goals of management and is unfair to some instructors.

Recommendations

The results of this study suggest the following recommendations:

1. If the evaluation form currently used by the Massachusetts Community College System continues to be utilized any

interpretation of student ratings of faculty should consider the impact of mode of field approach on these ratings.

2. When the student evaluation form is administered, more time should be taken to explain how each item might be exhibited by the instructor. This procedure could assist field-dependent students to make a more objective judgment.
3. More sophisticated statistical procedures should be employed in making decisions derived from student evaluations. The present practice of simply comparing mean ratings of faculty provides little useful information to either the faculty member or the administration.
4. Union and management should strive to find a more valid instrument for student evaluation, preferably, one which does not require disembedding skills and accommodates the numerous variables related to student evaluations. This instrument should be the product of sound research.

Suggestions for Further Research

The inconclusive results of this study suggest that further research is required in order to resolve the question addressed in this work. Since the procedure used in this study to collect expected grades resulted in an abnormally skewed distribution of the expected grades of field-independent students, future studies should consider more refined data collecting techniques. Perhaps, data concerning

expected grades should be collected in a more indirect fashion which does not involve the ego of the student. Such indirect measures should involve a larger number of data classes than were used in this study. Perhaps, an even more effective method of collecting expected grades might be to give students the following choice: Assuming 0 to be the lowest possible grade and 100 the highest, place yourself in the appropriate place between the two extremes. It might also be profitable to consider ability or reading scores in any future study. Rather than selecting subjects at random it may be more advantageous to pair field-independent students with field-dependents on the basis of ability. This procedure should produce more comparable groups.

If future research leads to a rejection of the hypothesis being considered in this study, it would be of value to identify the factor or factors which cause field-dependent students to give higher ratings to faculty than field-independents. If it is found that such higher ratings do originate from disembedding difficulties, the question of the validity of student ratings at the community college level would arise. Conversely, if it is found that the higher ratings result from the tendency of field-dependents to be more considerate, then research would be required to produce evaluation instruments which accommodate this factor.

It is hoped that the recommendations which have evolved from this study will stimulate further research and contribute to an increasing body of knowledge about the complexity of evaluations by humans.

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A P P E N D I X A

CONSENT FORMS

WRITTEN CONSENT FORM (FACULTY)

I, Charles C. Self, a professor at Bunker Hill Community College, Boston, MA, am conducting a research study for my dissertation in partial fulfillment of the requirements for a Doctor of Education degree from the University of Massachusetts-Amherst.

This study will involve approximately 200 students at Bunker Hill and 8-10 faculty. I hope that you will consent to be a participant in this study. You will be asked to:

1. Allow me to administer the evaluation form used by the Massachusetts Community College system to your students at the end of the semester.
2. Allow me to obtain the grades at the end of the semester of those students who have consented to particiate in this study.

The purpose of this study is to determine if there are any significant relationships among the variables of student cognitive style, rating given faculty and grade received by the student.

All materials will be treated confidentially. Code numbers will be used to insure the anonymity of the participants. The data collected will be analyzed statistically to determine if there are relationships among the variables noted above. The information from this study will:

1. be published in my doctoral dissertation;
2. be submitted to journals;
3. be presented to faculty/staff through workshops, etc.

Please note that a participant can withdraw from this study at any point in time.

Your help in this project is greatly appreciated. Attached please find a copy of the Consent Form that your students will be asked to sign.

I, ... have read the above statement and agree to participate in this study under the conditions listed above.

....

date Signature of Participant

WRITTEN CONSENT FORM (STUDENT)

I, Charles C. Self, a professor at Bunker Hill Community College, Boston, MA, am conducting a research study for my dissertation in partial fulfillment of the requirements for a Doctor of Education degree from the University of Massachusetts-Amherst.

This study will involve approximately 200 students at Bunker Hill. I hope that you will consent to be a participant in this study. You will be asked to:

1. Take the Group Embedded Figures Test (GEFT) published by the Consulting Psychologists Press. The test will take approximately 15 minutes. The GEFT attempts to identify one component of cognitive style, field-dependence/independence, a mode or method of processing information. It is important to note that there are no "good" or "bad" scores on the GEFT.
2. Evaluate your instructor using the standard instrument for the Massachusetts Community College System.
3. Grant permission to this investigator to obtain your grade in this course.

All materials will be treated confidentially. Code numbers will be used to insure the anonymity of the participants. The data collected will be analyzed statistically to determine if there are any significant relationships among field-dependence/independence, grades and ratings.

The information from this study will:

1. be published in my doctoral dissertation;
2. be submitted to community college journals, etc.
3. be presented to faculty and staff through workshops.

Within two weeks of the administration of the GEFT, the results will be made available to any participant who wishes to see their score.

Please note that a participant can withdraw from this study at any point.

Your help in this project is greatly appreciated and it is hoped that the results of this study will facilitate the learning/teaching process.

I, ... have read the above statement and agree to participate in this study under the conditions stated above.

.....
Signature of participant

.....
Date

A P P E N D I X B

FACULTY EVALUATION INSTRUMENT

COMMUNITY COLLEGE RESEARCH PROJECT

SECTION I

1. Student code: .....
2. Name of course: .....
3. Age: .....
4. Male or Female
5. Grade I expect to receive: A B C D N

SECTION II

E=excellent P=poor
VG=very good US=unsatisfactory
G=good

1. How well did the course meet the published course description?

   E VG G P US

2. How well were the instructional objectives of the course explained?

   E VG G P US

3. To what extent were the instructional objectives accomplished?

   E VG G P US

4. How well was the course organized?

   E VG G P US

5. How well prepared was the instructor?

   E VG G P US

6. How effective was the instructor's presentation?

   E VG G P US

7. How well do you think the instructor had a grasp on his/her subject matter?

   E VG G P US

8. To what degree do you think the method of instruction was appropriate to the course objectives?

   E VG G P US

9. How well did the instructor respond to the students' questions?

   E VG G P US

10. To what degree were the students encouraged and given the opportunity to participate in class?

    E VG G P US

11. How fair was the instructor's method of evaluation of student performance?

E VG G P US

12. Did the instructor meet with and help you when requested? Answer if applicable.

E VG G P US

13. How effective overall was the assigned text as a learning aid? Answer if applicable.

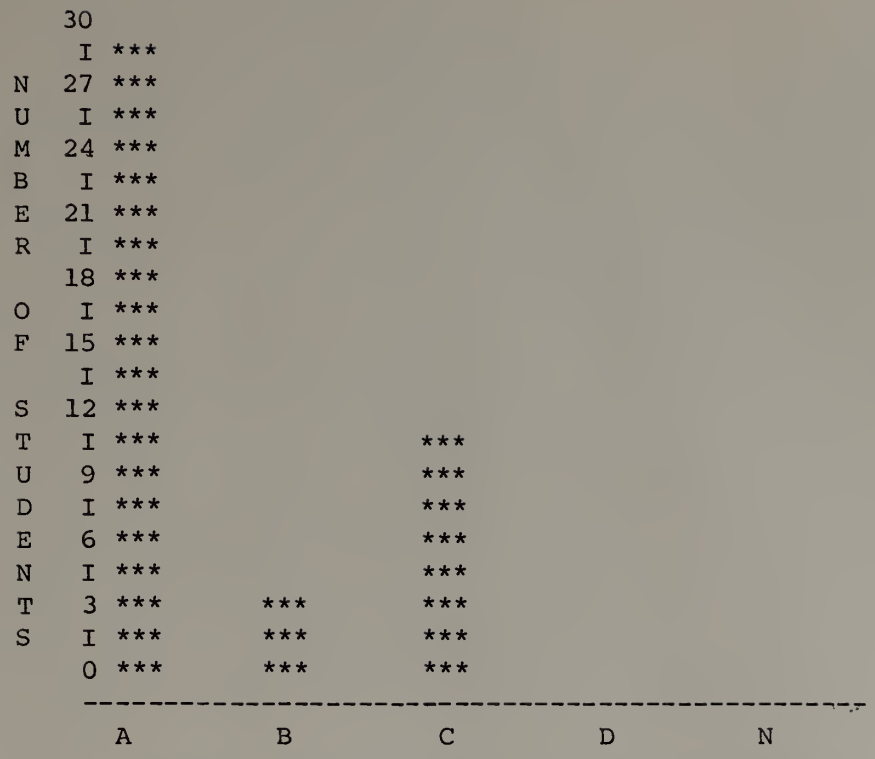
E VG G P US

14. How effective overall was the supplementary course material as a learning aid? Answer if applicable.

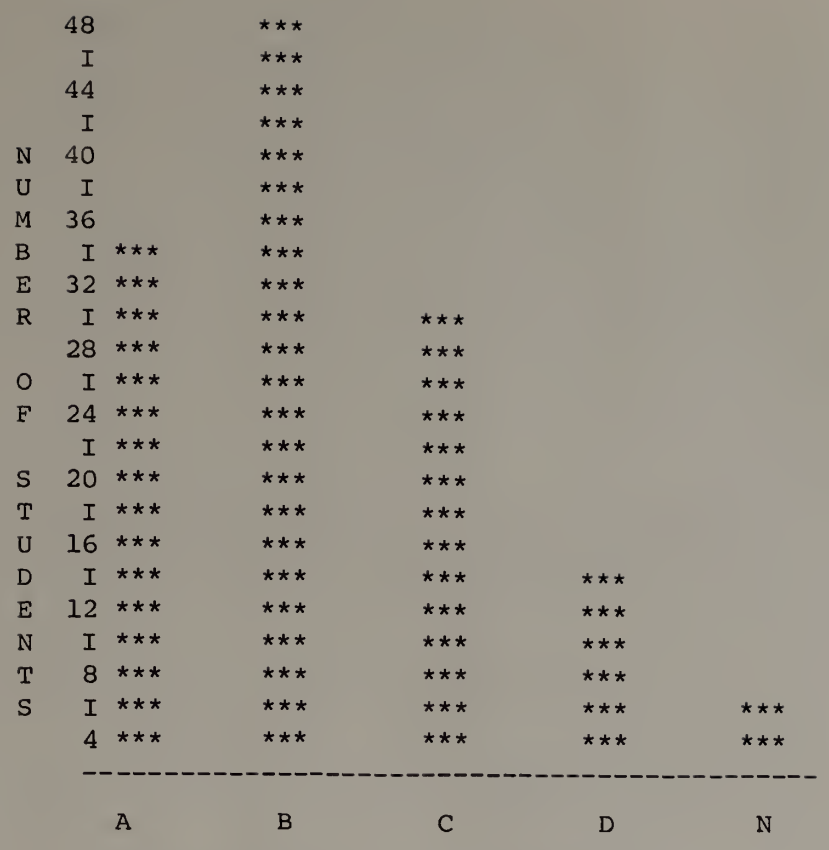
E VG G P US

A P P E N D I X C

FREQUENCY OF DISTRIBUTION OF EXPECTED GRADES



EXPECTED GRADE OF FIELD-INDEPENDENT STUDENTS


48
44
40
36
32
28
24
20
16
12
8
4
NUMBER OF STUDENTS
A
B
C
D
N
EXPECTED GRADE OF FIELD-DEPENDENT STUDENTS