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TEACHER DIRECTIVENESS AND STUDENT ACHIEVEMENT ORIENTATION

BY

© VERNER KEBERNIK

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Teacher Directiveness and Student Achievement Orientation", submitted by Verner Kebernik in partial fulfilment of the requirements for the degree of Master of Education in Educational Psychology.

Supervisor

Date 15 October 1980

To my wife Sharon. My straight man on life's crooked path.

ABSTRACT

The primary aim of the current investigation was to explore further the nature of the interactive relationship between teacher directiveness and student achievement orientation. The investigation was planned as an extension and replication of previous findings and was conducted from an ATI research perspective. The Ac and Ai scales of the California Personality Inventory and the Student Perceptions of Teacher Style (SPOTS) scale were administered to a sample of 213 university students. The dependent measures employed were grades, a teacher rating form and a satisfaction measure. Multiple regression analyses revealed that none of the interactions between directiveness and achievement orientation accounted for significant amounts of variance in any of the dependent measures. On the basis of these findings, it was concluded that previous research findings dealing with the interactive nature of the relationship between directiveness and achievement orientation may have been a consequence of having used only extreme scoring subjects on the Ac and Ai scales and that as a result, their generalizability and ability is rather limited. The differential predictive ability of the Ac and Ai scales was also sure to be suspect.

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CHAPTER I

INTRODUCTION

A major focus of comparative studies of college teaching methods since the 1920's has been the identification of the degree of structure or teacher directiveness which would be optimal in promoting student achievement and attitude. In educational research the directiveness dimension of college teaching has been referred to by such equivocal distinctions as student centered versus teacher centered, authoritarian versus nonauthoritarian, discussion versus lecture, structured versus nonstructured and directive versus nondirective. These distinctions reflect the troublesome issue of the promotion of assimilation versus the development of individual differences. They can be characterized by such descriptors of teacher behavior as formal, absolute, and structured on one end of the continuum and others, such as informal, tentative and unstructured on the opposite end of the continuum. The directiveness or structure dimension is usually seen to be global and encompassing. Berliner and Cahen (1973) state, "The structured-unstructured dimension of instruction can be thought of as an enviornment for learning as well as a particular style of teaching, rigid vs. flexible, or as a teaching method, lecture vs. discussion" (p. 75).

Until recently, comparative studies involving the directiveness dimension were aimed at demonstrating the relative superiority of one instructional method over another and were based on the assumption that one method would in fact prove to be the most beneficial for all students. Reviews of these studies (McKeachie, 1954; Anderson, 1959; Dubin and Taveggia, 1968) concluded that the research findings had yielded only in-

conclusive and often contradictory evidence and that the superiority of one method over the other had yet to be domonstrated. In spite of the failure to obtain significant differences between instructional methods, researchers remained convinced that differences between such obviously different instructional methods had to exist and that it should be possible to demonstrate these differences via the experimental design method. As a result, they focused their attention to methodological criticisms such as the inadequacy of operational definitions and the inappropriateness of dependent measures and statistical analyses. These methodological criticisms may often have been appropriate, but few educational researchers thought to question the main effects research orientation. Previous research had been strictly addressed to determining the average superiority of one instructional method over another and had sought to experimentally control for all individual differences and interactive effects that might be present. Most research continued to be directed zealously in the direction of main effects (Dubin and Taveggia, 1968) but yet, the possible importance of interactions in this line of educational research was in fact, alluded to quite early in the research literature. Spence (1928), in comparing discussion and lecture techniques, posed the questions: "What are the conditions under which Method A produces effective results? What are the situations where Method B is best?" (p. 462).

More recently, researchers have begun to look at the type of questions posed by Spence and have postulated that the inconsistent and often contradictory findings of earlier investigations may have been the result of their failure to acknowledge, in a primary way, possible interactions between student characteristics and instructional approaches. The research approach that addresses itself to the location of these interac-

tions has been termed aptitude-treatment interaction research (ATI). It is an attempt to combine the experimental and correlational approaches of investigating instructional methods and aptitudes (Cronbach, 1957; Cronbach & Snow, 1977). An interaction is said to be present "whenever an effect holds for one kind of subject under one set of conditions, but does not hold in the same way for other types of subjects or other sets of conditions" (Berliner & Cahen, 1973, p. 58). Aptitude as defined by Cronbach and Snow (1977) is "any characteristic of a person that forecasts his probability of success under a given treatment", where treatment is defined as "any manipulable variable" (p. 6).

According to Cronbach and Snow (1977), neither experimental research, which concerns itself with differences among the effects of instructional treatments, nor correlational research, which concerns itself with the association between characteristics of persons, has proven adequate in the development of theories of instruction. An interactionist approach to instructional research is necessary and is required if questions such as the following are asked:

> What characteristics make instructional situations "similar", in the sense that the situations all benefit the same kind of learner? And what variables define "similar" learners, ie., those ready to profit more or less equally from the same kind of instruction? (Cronbach & Snow, 1977, p. 3)

The primary aims of ATI research involve the identification and development of instructional treatments or enviornments that optimize educational opportunity and the identification of those aptitudes of the individual that would enable him to succeed in a particular treatment. Consequently, ATI research leads to formulations regarding 'person-environment fit and to theories of matching or instructional adaptation.

The ATI concept was first proposed by Cronbach in 1957, and although

interest in this research orientation has grown slowly, several reviews have now been published which describe a substantial number of studies where ATI has been appraised at least in a secondary way (Bracht, 1970; Berliner & Cahen, 1973; Snow, 1976; Cronbach & Snow, 1977). A large variety of treatments and aptitudes have been investigated but well-substantiated findings regarding ATI are scarce and "are chiefly useful as leads toward future research rather than as guides to educational practice" (Cronbach & Snow, 1977, p. 6). Two important issues, generalizability and replicability must be considered if ATI research findings are to have meaningful effects on educational practice. As a result, positive ATI findings must be replicated and studies conducted to be representative of actual educational settings.

In keeping with these considerations, the present study was undertaken as a naturalistic investigation and was planned as an extension and replication of one of the most well substantiated ATI findings relevant to the directiveness/nondirectiveness controversy.

CHAPTER II

REVIEW OF RESEARCH

The Directiveness Dimension: Review of Relevant Research

Background

In their comprehensive survey of four decades of comparative teaching-methods research, Dubin and Taveggia (1968) state that the underlying basis for much of the earlier research stemmed from "the ideological conviction that tutorial and small group situations were most efficacious for college-level teaching"(p. 15). This conviction arose from three major sources: traditional views of teaching, supply and demand of teaching services, and the impact of philosophic trends such as the progressive education movement (grounded in the psychology of individual differences) and the group dynamics movement (Dubin & Taveggia, 1968). Studies were undertaken with the intent of proving this conviction empirically and continued to be undertaken even when the experimental evidence suggested that little difference in achievement occurred as a result of class size or mode of presentation (Birney & McKeachie, 1955).

Although comparative studies of teaching methods have utilized a variety of distinctions, the consistent treatment-group distinction has been the degree of teacher-directiveness. As noted previously, philosophic trends such as the group dynamics movement influenced the formulation of research problems. Corresponding changes in terminology also followed. This is noted by Dubin and Taveggia (1968) who state that, "the term non-directive tends to be used in place of 'discussion method' or 'tutorial'" (p. 18). Leadership style is a firmly entrenched concept in the group dynamics movement and as a result of its implications for

teaching, lead to changes in comparative teaching methods research terminology.

What is now a classic study in the area of group dynamics was conducted by Lewin, Lippett, and White (1939). The study addressed the issue of leadership style and involved the supervision of teams of boys working on group projects. The supervising adults assumed three leadership styles. These styles were authoritarian, democratic and laissez-faire. The results of the study indicated that productivity was highest under authoritarian leadership but that morale was highest under democratic leadership. The third style, "laissez-faire", resulted in chaos and confusion and subsequently low productivity and low morale. The transfer of leadership style research to educational settings is understandable since the instructor is considered the "leader" and the class is considered the "group". Morale and productivity, the dependent measures employed in leadership research, are also comparable to the dependent measures, satisfaction and achievement, employed in educational settings.

Definition of directiveness

Authoritarian teaching practices are referred to as being directive or structured, while nonauthoritarian or democratic teaching practices are referred to as being nondirective or nonstructured. Berliner and Cahen (1973) draw attention to the similarity of terminology subsumed under the directiveness or structure dimension. They state:

> We include under the heading "structured" didactic, inflexible, conforming, lecture-method and other structured approaches to instruction. Under the heading "unstructured" we include student-centered, flexible, independent study, discussion-method and similar approaches to instruction. (p.73)

Dubin and Taveggia (1968), in contrasting the lecture and discussion method, state that in the former, the principle emphasis is on the instructional activities of the teacher, while in the latter, the emphasis is shifted from the instructional activities of the instructor to the interaction between instructors and students and to the subsequent "socializing" of the teaching-learning process (p. 28).

McKeachie (1954), in comparing student-centered and instructor-centered classrooms, found that in a student-centered classroom there was a higher degree of the following: student participation in goal setting, emphasis upon affective goals, instructor acceptance of inaccurate statements, group cohesiveness, ability of the group to determine its own fate, amount of time devoted to discussing personal experience and problems, student participation and student interaction.

Tuckman (1968), utilizing prior studies and direct classroom observation, put forth a two dimensional definition of directiveness and developed a scale for its measurement. According to Tuckman, the following behaviors are characteristic of non-directive teaching:

Structure
(1) formal planning and structuring of the course
(2) minimizing informal work and group work
(3) structuring group activity when it is used
(4) rigidly structuring individual and classroom activity
(5) requiring factual knowledge from students based on absolute scores

Interpersonal
(1) using absolute and justifiable punishment
(2) minimizing the opportunity to make and learn from mistakes
(3) maintaining a formal classroom atmosphere
(4) maintaining a formal relationship with students
(5) taking absolute responsibility for grades (p. 19)

Research findings

Comparative research studies involving the directiveness dimension have usually employed outcome measures such as student achievement (mea-

sured by test scores or grades) and satisfaction as their dependent variables. As noted previously, these are comparable to the productivity and morale outcome measures used in the leadership style research conducted by Lewin et al (1939). Within educational settings, the research findings for both dependent measures have been inconclusive and often contradictory.

With student achievement as the dependent measure, several studies (Spence, 1928; Asch, 1951; Guetzkow, Kelly & McKeachie, 1954) found differences favoring a directive approach to instruction while other investigations (Faw, 1949; Tuckman, 1968) found differences in favor of a non-directive approach to instruction. Other studies, (Gerberich & Warner, 1936; Eglash, 1954; Haigh and Schmidt, 1956; Rasmussen, 1956; Krumboltz & Farquahar, 1957) have reported findings of no differences. Anderson (1959), in a review of studies comparing teacher-centered and learner-centered methods of instruction, found that with achievement as the outcome measure, eight studies favored the former, eleven studies favored the latter and thirteen showed no differences. Dubin and Taveggia (1968), in a review of 36 studies comparing the lecture and discussion method, report that out of a total of 88 independent comparisons, 51.1% favored the lecture method while 48.9% favored the discussion method. They further report that this difference was not statistically significant and conclude: "Thus, we feel confident in concluding that the lecture and discussion are equally effective methods of instruction" (Dubin & Taveggia, 1968, p. 31).

Similar inconsistencies are present with satisfaction as the dependent measure. Tuckman (1968) and Eglash (1954) found that students preferred directive instruction. Anderson (1959), in his review of the lit-

erature, concluded that morale appears to be higher under nondirective instruction.

From the foregoing review of the research it would appear that achievement and satisfaction are related to directive and nondirective methods of instruction but that the relationship is more complex than originally assumed. Previous explanations concerning the inconsistencies and contradictions in this research have focused on methodological criticisms rather than the conceptualization of the research problem. According to Porteus (1976) the explanation of contradictions has focused on issues pertaining to the inadequacy of operational definitions of concepts, the unreliability of measuring instruments and the inappropriateness of the statistical analysis utilized. Although such explanations may often have been appropriate, they do not question the conceptualization of this research within the experimental paradigm. The majority of studies were specifically designed to demonstrate the superiority of one instructional approach over the other and, in keeping with the main effects tradition rarely questioned "the assumption long basic to all such research, that the average superiority of one or another instructional method is what constitutes the most useful guide for educational practice" (Porteus, 1976, p. 3). Some earlier researchers (Wispe, 1951; Haigh & Schmidt, 1956) did, however, allude to the possibilities of interactions between instructional methods and student personality characteristics.

The Interactive Approach

Background

More recently, researchers have suggested that the controversial and contradictory results of earlier research may have been the failure

to take into account interactions between student characteristics and instructional methods (Tuckman, 1968; Newsom, Eichens & Looft, 1972; Dowaliby & Schumer, 1973; Domino, 1975; McCann & Fisher, 1977; Cronbach & Snow, 1977). Previous research studies had employed a comparative approach. Measures of central tendency were used to assess the differential effectiveness of one instructional method over another. Although some students may do better with one or the other method, the primary purpose of the design and statistical procedures used in main effects research with respect to individual differences, is to eliminate and control for their effect. As a result, the possible mediating influence of student characteristics are dismissed as sampling error (Cronbach & Snow, 1977).

The apparent paradox between a main effects approach and an attempt to develop theories of instruction and educational practice is noted by Newsom et al. (1972) who state:

> It is proposed here that this lack of attention for individual differences is especially pernicious in the conduct of meaningful research in applied learning situations, given the assumption that the individual learner is, or should be, the ultimate concern in our educational settings. (p. 387)

The previously asked research question, "Is method A superior to method B?" must now be changed to "For which students is method A or B most appropriate?" As a result, it would appear that the most promising and useful approach for developing appropriate instructional practices and detecting differences between instructional methods is to "incorporate into designs and analyses relevant individual difference measures" (Dowaliby & Schumer, 1973, p. 125). The research orientation which is addressed to the issue of dealing with instructional methods and student characteristics simultaneously, has been termed aptitude-treatment interaction and is usually designated by the acronym ATI.

ATI: Overview and implications

The ATI research orientation was first proposed by Cronbach in 1957 and originated from his contention that both traditional lines of behavioral research, the experimental and the correlational, were in themselves, inadequate to deal with the complexities of psychological research. Cronbach (1957) urged the fusion of these lines of research and stated:

> Correlational psychology studies only variance among organisms; experimental psychology studies only variance among treatments. A united discipline will study both of these, but it will also be concerned with the otherwise neglected interactions between organismic and treatment variables. (p. 681)

The concept of interactions is by no means new to the biological or social sciences and in their discussion of the social and philosophical context of interactionist theory, Cronbach and Snow (1977) refer to Darwinian theory as being interactionist. They also cite the following quotation:

> The only thing that can be done is to equalize opportunities, so as not to enable the really exceptional man to demonstrate the fact, but to make the open avenues so numerous and so easy to travel that he will be sure to find the one to which he is best adapted by nature. (Ward, 1906, p. 277)

According to Cronbach and Snow (1977) "aptitude measures and educational methods should form a mutually supporting system" (p. 9) from which educational programs that would optimize the individual's chances for success could be developed. The instructional treatment most suited to the average individual is in many instances not the best for all individuals, especially when significant interactions between student characteristics and instructional treatments occur.

The problem then becomes one of locating these interactions, or in ATI terminology, determining the nature and extent of Aptitude X Treat-

ment interactions. Briefly, the ATI research orientation "asks simultaneously about the relationships of aptitude to outcome under a particular treatment in the correlation tradition and about the effects of different treatments in the experimental tradition" (Porteus, 1976, p. 4). According to Berliner and Cahen (1973), an interaction is present "whenever an effect holds for one kind of subject under one set of conditions but does not hold in the same way for other types of subjects or other sets of conditions" (p. 58). In statistical terms an ATI exists whenever the regression of outcome on aptitude under one treatment is different from the regression of outcome on aptitude under another treatment [slopes are different] (Porteus, 1976).

According to Cronbach and Snow (1977), "interactional research has gained momentum slowly" (p. 5) but nevertheless, enough research studies utilizing the ATI paradigm have been conducted that several reviews have been published (Bracht, 1970; Berliner & Cahen, 1973; Snow, 1976; Cronbach & Snow, 1977).

When significant ATI's are identified, ATI research may possibly be useful towards developing more appropriate instructional theories and educational practices. Interactions can be classified as being either ordinal or disordinal. In an ordinal interaction the rank order is constant across all levels of the aptitude while in a disordinal interaction the rank order is different for varying levels of the aptitude. In the latter the regression lines intersect within the aptitude range. Disordinal interactions have more apparent utility when attempts are made to adapt instruction to a particular aptitude, but when factors such as the cost of treatment are taken into account an ordinal interaction may also have considerable practical implications. An example regarding the prac-

tical implications of an ordinal interaction is procided by Bracht (1970):

> Experimenters should begin to formulate hypotheses about ATI with administrative factors, such as cost, in mind. For example, suppose treatments A and B cost $3.00 and $5.00, respectively, per student. If low-ability students perform significantly better on B and middle- and high-ability students do equally well on both, the following decisions may be made: (a) Give treatment A to the middle- and high-ability students and (b) Give treatment B to the low-ability students. Hence, ordinal interactions may lead to decisions about differential assignment of students to treatments when administrative factors are taken into account. (p. 640)

As noted previously, disordinal ATI's may provide useful data in regards to the individualization or adaptation of instruction. As Snow (1976) states: "It is now clear, however, that all attempts at individualizing instruction rest explicitly or implicitly on hypothesized ATI" (p. 54). As a result ATI research inevitably leads to theories or strategies of matching. Salomon (1971) has outlined three such strategies or models: 1) remedial 2) compensatory 3) preferential. These are outlined in more detail in Table 1. Similar matching strategies are outlined by Cronbach and Snow (1977) and although the term preferential has been changed to the term capitalization, the strategies are quite comparable to those of Salomon.

In summary, it would appear that ATI research can be perceived as having two primary aims: 1) improving instruction 2) developing better explanatory principles concerning the nature of instruction (Salomon, 1971). Research investigating the interaction between student characteristics and the directiveness dimension of instruction is certainly in keeping with the two primary aims of ATI outlined above. In fact much of the data supporting the ATI research orientation has originated from such studies.

TABLE I

Summary of ATI heuristic models

The Model	The Function of the Instructional Treatments	The Major Differences between Treatments	The Kinds of Aptitude Measures Used	Predictions
Remedial	Treatments lead to mastery of necessary deficient subordinate objectives.	Amount of time spent on reaching mastery; number of remedial instructional sessions.	Measures of task-specific mastery. More general abilities are transformed into instructional objectives and are dealt with as if task-specific capabilities.	Proficient learners experience interference or boredom with excessive remediation; low proficiency learners benefit since they attain necessary subordinate objectives.
Compensatory	Treatments provide the learners with the necessary mediators, organization of material, modality and the like, which they cannot provide for themselves; or circumvent debilitating effects of certain psychological traits or states. It is not assumed that the deficiencies need to be remedied.	The extent to which treatments provide overtly what learners would have to provide for themselves; or the extent to which they neutralize the effects of certain traits or states.	Measures of general abilities, modes of information processing, general states or traits.	High aptituders experience interference when given treatments which provide them with mediators they can provide on their own. Low aptituders benefit when mediators they are lacking are provided overtly.
Preferential	Treatments call upon and utilize learners' higher aptitudes, neither making up for deficiencies nor compensating for them.	Differences may be in content, structure, modality of presentation, etc. Each alternative treatment plays on aptitude in which the learner is more proficient.	Measures of general abilities, modes of information processing or motivation.	Each learner learns best when an aptitude in which he is proficient is called upon.

Note. Salomon, 1971, p. 340.

Research findings relevant to the current investigation

The following review deals with several research investigations relevant to the current investigation. These studies have been selected on the basis of their relevance to the present investigation with respect to conceptual, methodological, and practical considerations.

An early study by Wispe (1951) investigated the general effects of directive and permissive teaching but also included in its research objectives the following ATI oriented question: "What are the reactions of different kinds of students to the directive and permissive teaching methods?" (p. 163). Eight sections of an elementary course in social relations were matched on the basis of the following: 1) a fifty item pre-test 2) SAT scores 3) secondary school background 4) year in college and 5) size of section (approximately 20). Four sections of the course were then taught in a permissive style, defined as being student-centered and informal, while the other four sections were taught in a directive style, defined as being subject-matter-centered and formal. The outcome measures included three measures to survey student attitudes and feelings toward the course and instructors, and a three-hour final examination. The findings of the study revealed that most students preferred the directive instruction because it was more clearly defined and for its presumed value in examination preparation. The permissive sections were, however, enjoyed more but were not seen as valuable. No significant differences were found between the permissive and directive sections when the outcome measure employed was examination performance, but when students were divided according to pre-test SAT scores, it was demonstrated that the directive sections were more beneficial to the poorer students. The study appears to be one of the first to actually

have considered the interaction of student characteristics and instructional style. This fact is recognized by the author in his discussion regarding the implications of the study. He states: "On the methodological side, this study presents a pilot attempt to understand the interaction of certain personality factors and certain situational dynamics" (Wispe, 1951, p. 184).

Tuckman (1968) tested the hypothesis that, for vocational and nonvocational teachers, a directive teaching style would be more effective with concrete authoritarian students and that a nondirective teaching style would be more effective with abstract, nonauthoritarian students. Tuckman's study was conducted in two phases. In phase one, prior to testing the above hypothesis, Tuckman's efforts were directed to the following: 1) the development of an operational definition of teacher directiveness and nondirectiveness 2) development of a practical, valid, and reliable measure of teacher directiveness and 3) demonstration of the validity and reliability of the instrument. The SPOTS (Student Perception Of Teacher Style) scale was developed to correspond with the author's previously mentioned operational definition of directiveness. (For a more complete discussion of the advantages and disadvantages of using a student rating scale the reader is referred to Tuckman, 1968,, p. 28).

In phase two of the study, 24 out of 40 teachers were selected on the basis of their revised SPOTS scores. They were then classified as being either directive or nondirective. The assignment criterion for each group was a score one-half standard deviation or more than the mean SPOTS score for all teachers in a respective group (vocational or nonvocational). The subjects in the study were 514 male students in either

their junior or senior years (11th or 12th grade). The independent measures utilized were the F-scale, to assess authoritarianism, and the Interpersonal Topical Inventory to assess abstract-independence. Each independent measure was used for a separate set of analyses. The outcome measures employed were achievement (grades), relative preference for teacher and course satisfaction. In summary, the findings were as follows: 1) all students preferred, and were more satisfied with, nondirective teachers 2) abstract students preferred nondirective vocational teachers while concrete sutdents showed equal preference for the two groups and 3) nonauthoritarian students earned higher grades and showed more marked course satisfaction under nondirective teachers than did authoritarian students.

McCann and Fisher (1977) investigated the interactive relationships of teacher directiveness and student authoritarianism and dogmatism to grades and satisfaction. High school students (11th, 12th and 13th grade) and their teachers were utilized as subjects. Teacher directiveness was assessed with the Student Perception Of Teacher Style (SPOTS) scale while authoritarianism and dogmatism were assessed with the F-scale and Dogmatism scale. Outcome measures employed were a satisfaction scale and two measures of student achievement, grades and z-grades. Intelligence, teacher sex, student sex and the match of teacher and student sex were considered as covariates in the study. The researchers utilized two measures of directives; mean directiveness as measured by the mean student ratings and perceived directiveness as measured by the mean score of each student. The results of the study indicated that the expected interactive relationships between teacher directiveness and the independent variables did not materialize but that several interactions

did reach significance when mean directiveness was replaced by perceived directiveness. Perceived directiveness interacted with student authoritarianism in the determination of z-grades and with student dogmatism in the determination of satisfaction. McCann and Fisher also concluded that perceived teacher directiveness appeared to be somewhat independent of actual teacher directiveness.

Dowaliby and Schumer (1973) explored the interactive relationship between type of classroom instruction and manifest anxiety. They hypothesized that students high in manifest anxiety would perform better in a teacher-centered (structured) classroom than in a student-centered (unstructured) classroom. The converse was hypothesized for students low in manifest anxiety. Sixty-nine college juniors in two sections of an introductory psychology course, not aware they were participating in an experiment, served as the subjects of the study. Both sections were taught by the same instructor but using two different styles. In one section the instructor employed a teacher-centered lecture format while in the other a student-centered discussion format was utilized. Individual difference measures utilized were the Taylor Manifest Anxiety Scale and a mental ability test (50 items randomly drawn from the Otis-Lennon Mental Ability Test). The outcome measures employed were two multiple-choice exams dealing with material previously covered in class. An analysis of main effects revealed that no differences were present between the two groups on either outcome measure. Significant disordinal interactions were obtained when each dependent measure was regressed on manifest anxiety. Students high in manifest anxiety performed better in the teacher-centered section while students low in manifest anxiety performed better in the student-centered section. Dowaliby and Schumer

also reported the results of a pilot study in which they hypothesized that perception of structure, as opposed to actual structure, might produce similar interactions to those reported above. Students (N=51) in a traditionally taught introductory educational psychology course were asked to rate the course in terms of its structure halfway through the term. A 1-7 rating scale was used. Students who rated the course 6 or 7 on the scale were designated as the perceived-lecture group while students who rated the course 1 or 2 were designated as the perceived-discussion group. Subjects who gave responses in the middle of the scale were discarded and as a result total N was reduced to 30. Anxiety was assessed with the Taylor Manifest Anxiety Scale. For each group, the outcome measures were regressed on anxiety. The results of the study showed that an ATI was present between manifest anxiety and classroom structure and were consistent with the findings of the main study. In summary, it would appear that students perception of structure vary greatly, and that they may be quite independent of "actual" structure.

Domino (1968, 1971) conducted two studies in which he investigated the relationship between teaching style and achievement orientation (as assessed by the Achievement via Independence (Ai) and Achievement via Conformity (Ac) scales of the California Psychological Inventory). Domino (1968) summarizes the intent of the two scales as follows: "The first of these, Achievement via Conformance (Ac), identifies those aspects of motivation that facilitate achievement in settings where conforming behavior such as acceptance of regulations, a high degree of self-discipline, efficiency and responsibility are rewarded... Achievement via Independence identifies those motivational aspects that facilitate achievement in settings rewarding independence, individuality, self-reliance

and creative innovation" (p. 256). In both studies, the differentiating dimension of teaching style, was the degree of instructor directiveness. This is evidenced in the criteria used by Domino in classifying courses. These were as follows:

> A course was deemed as rewarding conforming behavior if it was characterized by emphasis on : (a) memorizing of technical terms, definitions, poems, etc.; (b) presentation of material through lectures; (c) objective type examinations; (d) keeping of attendance records; (e) discipline and adherence to regulations (e.g., no smoking, absences justified by written medical reasons); (f) clearly defined and frequent homework assignments emphasizing convergent thinking; (g) rare use of visual aids, outside speakers, little variation in class routine; (h) close correspondence between lecture material and textbook; (i) identical assigned readings for all class members; and (j) course grade determined by proportional weighting of various course requirements.
>
> A course was deemed as rewarding independent behavior if it was characterized by emphasis on: (a) ideas rather than facts; (b) seminar discussions, student presentations, or question-answer format; (c) no examinations, or examinations involving essay questions; (d) little concern for attendance; (e) little explicit emphasis on discipline and adherence to school regulations; (f) no homework assignments, or assignments demanding divergent thinking; (g) variety of presentation, as indicated by use of visual aids, tape recordings, outside speakers, or other material; (h) little direct overlap between class discussions and textbook content; (i) suggested readings, or assigned readings individually tailored to a student's interests; and (j) grade determined by consultation with student or by global evaluation of student's performance. (Domino, 1968, p. 257)

Domino's first study (1968) was naturalistic and involved the classification of college undergraduate courses according to the above criteria for rewarding either conformity or independence. Four groups of 22 students, matched on sex and nonverbal intelligence test, were then chosen from an initial pool of 348 students. All students had previously completed the Ac and Ai scales and the groups were chosen from the extreme corners of a bivariate Ac/Ai distribution. The outcome measures employed were grades which were sorted according to the style of

the course in which they were earned. Each student had two grades, one obtained in a "conforming" course and one obtained in an "independent" course. The results of the study revealed that students high on both Ai and Ac obtained the highest grades while students low on both Ai and Ac obtained the lowest grades. For students with uneven aptitude, high Ai-low Ac or low Ai-high Ac an interaction was observed. Low Ac-high Ai students obtained higher grades in "independent" courses while high Ac-low Ai students obtained higher grades in "conforming" courses.

Domino's second study (1971) was experimental in nature and was addressed to the specific hypothesis "that students high on Ac or Ai who are taught in a manner consonant with their achievement orientation will perform better academically and report greater satisfaction than their peers who are taught in a manner dissonant with their achievement orientation" (p. 427). One hundred sophomore university students were selected from a subject pool of approximately 900 students on the basis of their Ac and Ai scores (top 50 high Ac-low Ai and top 50 low-Ac-high Ai). These were then divided in half, forming four groups of 25, two of each achievement orientation pattern. Groups were equated on the basis of sex, and SAT scores and then assigned to four introductory psychology sections. One group of high-Ai students and one group of high-Ac students were taught in a "conforming manner"; a second group of high-Ai students and a second group of high-Ac students were taught in an "independent" manner. The "conforming" and "independent" styles were in accordance with the criteria Domino had utilized in his 1968 study. All four groups were taught by the same instructor, but both the instructor and students were unaware of how assignments to sections had been made. Seven outcome measures were employed: student performance on a 200 item multiple-

choice exam, student performance on essays scored for factual content and degree of original thinking, course grade (assigned without reference to the final examination), cummulative GPA, satisfaction with course, and satisfaction with instructor. Significant interaction effects between achievement orientation and teaching style were obtained for the multiple-choice test, teacher effectiveness ratings, factual knowledge on essay questions, course evaluation and final course grade.

Petersen (1976) sought to generalize and build on the previous research findings of Dowaliby and Schumer (1973) and Domino (1968, 1971). The aptitude and treatment variables from these previous studies were utilized to investigate more fully the interactive relationship between learner characteristics and teaching style. The subjects (N=94) for the study were ninth-graders enrolled in a compulsory social science course. The specific research question of relevance to the current investigation was stated as: "How does achievement orientation interact with the instructional treatments to affect student achievement, retention and attitude?" (Petersen, 1976, p. 28). The other research questions were similar but dealt with the other aptitudes, anxiety and ability. Petersen reconceptualized instructional treatments on the basis of structure (Str) and participation (Par) and set up four instructional styles: High Str-High Par, High Str-Low Par, Low Str-Low Par, and Low Str-High Par. One teacher was trained to implement each of these styles and then taught a two-week unit on alienation to each of four sections using a different style. Students were randomly assigned to sections. Petersen summarizes the structure and participation components as follows:

> In the high structure conditions, the teacher stated the goals of the lesson, emphasized important points, gave clear signals when part of the lesson ended and another

> began, summarized during the lesson, and reviewed at the beginning and end of the lesson. In the low structure conditions, the teacher engaged in none of the preceding behavior. In the high participation approaches, the teacher asked many questions to elicit discussion among students, redirected questions to other students, waited several seconds after each student remark to allow time for other students to comment, and had students read aloud in class. In the low participation conditions, the teacher asked few questions of students, used explanations to present content, did not redirect questions, did not wait after a student remark, and read aloud the assigned readings to the class. (p. 159)

The aptitude measures, completed prior to instruction were the Children's Manifest Anxiety Scale, the Speilberger Anxiety Trait Scale, the Ai and Ac scales from the CPI and a verbal ability test. With regard to achievement orientation two new aptitude constructs were developed, Ac plus Ai and Ac minus Ai. This was necessary in order to examine the effect found by Domino (1971) and as Snow (1976) states, "to distinguish general motivation toward achievement from special orientation toward independence vs. conformity" (p. 56). The dependent variables, or outcome measures were a multiple-choice test, an essay test and an attitude inventory.

Discussion of the results will deal only with achievement orientation, as anxiety and ability did not produce significant ATI's on their own. Multiple regression analyses for the multiple-choice and essay tests revealed the presence of a significant ATI effect for the Ac minus Ai construct. Petersen claims that the ATI for Ac minus Ai "bears a striking resemblance to the Domino effect" but upon closer examination this is somewhat dubious as the treatments in which the interactions occur are too dissimilar (i.e.) high Ac-low Ac students did best under Low Str-Low Par when they would be expected to do best under Low Str-High Par. For Essay Achievement, Petersen's results do resemble Domino's (1971) re-

sults more closely. Independent students did best on essay achievement in Low Str-High Par while conforming students did best in High Str-Low Par. These two styles resemble Domino's "independent" and "conforming" approaches more closely.

Porteus (1976) investigated "the interactions of multiple student aptitudes and teacher-centered vs. student-centered instruction on high school student achievement and attitude" (p. 163). High school juniors and seniors (N=56) enrolled in two courses, Economics and Education, served as subjects for the study. Two sections of each course were taught using either of two instructional styles. According to Porteus, treatments were in accordance with the criteria that was used by Domino (1968, 1971). One instructor taught all sections. A battery of aptitude measures was administered during the first week of classes. Factor analysis reduced these measures to four orthogonal factors, two of which correspond to the achievement orientation measures, Ac and Ai. The following discussion will focus on these two measures. Although Porteus has termed these two factors intellectual independence (a factor combining achievement via independence and flexibility) and conforming motivation (a factor combining achievement via conformance, negative flexibility, and the achievement motivation questionnaire) Snow (1976) in a review of Porteus's study states that "expansion of the Ai and Ac constructs by the additional components does not seem to have changed their meaning appreciably" (p. 51). Outcome measures were both cognitive and affective in nature. Cognitive outcomes were three tests administered throughout the year. Affective outcomes were questionnaires pertaining to preferences and attitudes toward the instructional approach and teacher administered at each exam period. No significant ATI was

present in the Education course for cognitive or affective outcome measures. In Economics, significant ATI was found only on the second test. This interaction replicated the Domino (1971) findings. High M-low I students did better with a teacher-centered style of instruction while low M-High I students did better with a student-centered style of instruction.

CHAPTER III

BASIS AND RATIONALE FOR CURRENT INVESTIGATION

Background

Analysis and synthesis of previous research findings

Cronbach and Snow (1977) have described Domino's investigations (1968, 1971) as being exemplary in the area of ATI research. Both investigations, one naturalistic and the other experimental, found considerable evidence suggestive of an interactive relationship between achievement orientation and teaching style. In both investigations, however, Domino selected students from the extremes of the Ac/Ai distribution. With respect to design considerations, Domino's investigations may appear exemplary, but in light of the selection criteria (extreme groups) employed with regard to degree of student aptitude, the generalizability and utility of the findings is somewhat questionable. Evidence for this contention is cited by Goldberg (1970). In an attempted replication of Domino's findings, Goldberg states that in a sample of 350 male students, only ten met Domino's criteria for assignment to the high Ai-low Ac group while no students met the assignment criteria for the low Ai-high Ac scale. In a sample of 430 females, only 17 met the criteria for assignment to the high Ai-low Ac group, while only three met the criteria for assignment to the low Ai-high Ac group. As a result, Goldberg warned that Domino's findings might not be applicable to subjects with less extreme discrepancies between their Ac and Ai scores.

Both the Ac and Ai scales are measures of general motivation toward achievement and as result are positively correlated. Correlations

cited in the CPI handbook (Gough, 1957) are .38 for males and .39 for females. The correlation between Ac and Ai is not cited in Domino's 1968 study. The correlation cited in the 1971 study is -.83 and would appear to be a consequence of having chosen extreme groups of students from the Ac/Ai distribution. It highlights the uniqueness of the sample utilized by Domino. In the Porteus (1976) study the correlation between Ac and Ai was reported as .07 while in the Petersen study it was .29. Both these correlations are more in keeping with those cited in the CPI manual. The support for the Domino findings provided by the Petersen (1976) and Porteus (1976) investigations is at best, minimal. Petersen obtained similar results to Domino for only one of the cognitive measures used and on none of the attitude measures. Porteus's results are similarly disappointing in that a significant interaction between achievement orientation and teaching style was found on only one of the cognitive outcome measures. No significant ATI's were found on any of the affective measures employed. Compared to Domino's findings, these results are very weak since in Domino's 1971 study, significant ATI's were found on five of the seven dependent measures employed.

In contrast to the extreme group design utilized by Domino, both the Petersen and the Porteus studies utilized the full range of Ac and Ai scores in constructing student aptitudes. In addition, age of subjects differed. Domino utilized college students as subjects, Petersen used ninth graders and Porteus used high school students. Although failure to strongly replicate the Domino findings may be attributed to either difference, the utility and generalizability of Domino's findings are certainly quite questionable and less worthwhile if the interaction effects

between achievement orientation and teaching style occur only for a limited number of extreme scoring subjects. Replication of Domino's findings using the full range of college students' Ac and Ai scores would appear to be desirable if the results are to be of any instructional relevance.

The studies conducted by Tuckman (1968) and McCann and Fisher (1977) both used student ratings to assess teacher directiveness. By using student ratings to assess directiveness, it was possible for both studies to assess the presence of ATI within actual instructional settings. In addition, by eliminating the need for experimental manipulation of teaching style, possible shortcomings such as the artificiality of role-playing different styles, the often short-term duration of treatments and the lack of generalizability can be avoided. The use of student ratings of dire[illegible]s not, however, without difficulty since ratings may be adver[illegible]cted by such factors as lack of rater sophistication and halo [illegible]. In the pilot study conducted by Dowaliby and Schumer (1973), the [illegible]e of student ratings as measures of directiveness produced equivocal r[illegible]lts to those obtained when directiveness was experimentally manipulated.

Studen[illegible] ratings of directiveness may, however, be employed in two ways. In the Tuckman study, student ratings were used to assign a mean directiveness score to each instructor. The use of student ratings in this manner is similar to an experimental manipulation in that the instructor's degree of directiveness is assessed to be the same for a group of students. In the McCann and Fisher study, the predicted ATI was not obtained when mean directiveness was employed. However, by utilizing

each student's individual perception of directiveness, significant results were obtained. Since the group mean is the best estimate of an individual's score, perceived and mean directiveness can at times be quite similar but at other times quite different. In the mean, or actual directiveness condition, directiveness is treated as an environmental variable while in the perceived condition it is treated as an organismic variable. This distinction between "actual" and "perceived" environment has been noted by other researchers, notably Cronbach and Snow (1977) who state: "The student's perception of his teacher may be just as significant a source of interaction as the teacher's style" (p. 508). Pervin (1968), in a paper dealing with individual-environment fit, addressed the issue of whether one should consider the "perceived" or "actual" environment in research. Pervin concluded:

> The final answer to this question will likely involve an understanding of the circumstances under which one or the other kind of data would be most useful. Until then, of course, both kinds of data should be obtained wherever possible. (p. 65)

When student ratings are employed to assess directiveness both kinds of data are readily available since analysis can be conducted at either the group or individual level.

The outcome measures employed in the research studies reviewed basically fall into two categories, productivity and morale. Productivity has been assessed with tests or exams while morale has been assessed by measures of satisfaction and attitudes toward the course and/or instructor. Both are undoubtedly relevant and desirable outcomes within an educational setting and should continue to be used as outcome measures. In addition, by evaluating both productivity and morale, the

possibility of differential outcomes being produced by different methods can be evaluated.

The foregoing analysis has brought to light several important issues and considerations with respect to the interaction between teaching style and achievement orientation. In summary, these form the underlying basis for the current investigation and are basically as follows. Attempted replications of the achievement orientation and teaching style interaction have not proven very successful and have, at best, provided only minimal support. Further investigation of the ATI between teaching style and achievement orientation appears warranted since it is possible that Domino's finding may only apply to extreme scoring subjects on the Ac and Ai scales. The use of student ratings to measure directiveness seems justified and in addition allows one to evaluate ATI within actual educational settings. Although mean directiveness would appear to be a more practical measure with respect to current educational practice, perceived directiveness would also appear to be worthy of investigation. Outcome measures that assess both productivity and morale would appear to have the most instructional relevance. Other issues of relevance are those of covariate control and statistical analysis. These will be considered next.

Covariate control

In several of the previously reviewed studies (Wispe, 1951; Domino, 1968; Domino, 1971; McCann & Fisher, 1977) researchers have sought to control for the effects of such variables as sex of student, sex of instructor, year in college and intelligence. Experimental or quasi-experimental investigations have employed the use of matching strategies and random assignment while naturalistic investigations such as the McCann

and Fisher study (1977) have considered these variables as covariates and allowed them to account for variance in the dependent measures first. Research pertaining to many of these variables appears to be quite contradictory but nevertheless it seems highly probable that they may often be a significant source of variation. In recognition of this fact, Cronbach and Snow (1977) state:

> Persons who differ in sex, age, and social status tend to differ psychologically. They respond differently to this or that social stimulus, and they may respond differently to the intellectual demands of a particular kind of instruction. (p. 482)

Elmore and LaPointe (1974), in their discussion of the influence of student and instructor sex on the evaluation of college teachers, conclude that research results are quite conflicting with regard to either variable. Costin, Greenough and Menges (1971), in their review of student ratings of college teaching, report the presence of conflicting results for both instructor and student sex and year in college. In a study of the relation between instructor types and student traits, Lucas (1970) found that age appeared to interact with instructional style in regards to performance. Although the foregoing review is quite brief, it is apparent that demographic variables may have a confounding influence on educational outcomes. In keeping with this contention and the practice of previous research, it would appear to be desirable to control for as many of these variables as possible.

Statistical analysis

Mulitple regression analysis is seen to be the preferred approach for ATI investigations (Berliner & Cahen, 1973; Cronbach & Snow, 1977). Multiple regression analysis does not require that continuous variables be broken down into levels and as a result, is a much more powerful tech-

nique than the traditionally used ANOVA. In addition, multiple regression analysis is highly appropriate for use in naturalistic investigations, and as demonstrated in the McCann and Fisher (1977) study can effectively be used to control for the possible confounding effects of variables such as sex or age. Within the regression equation, interaction terms are simple products of independent variables and are entered immediately following the independent variables (Cohen & Cohen, 1975). If the increment in variance accounted for by the interaction term is significant, the relationship between the two independent variables is conditional and the regression lines are not parallel. In the case of continuous variables, the nature of the interaction may then be observed by substituting low and high scores (one standard deviation above the mean and one standard deviation below the mean) into the regression equation and then plotting the subsequent regression lines.

Research Questions

Although the ATI effects found in the Domino studies (1968, 1971) appear to be quite definitive, attempted replications of the achievement orientation and teacher style interactions have only been marginally successful. Since Domino's findings may have been the result of having used only extreme scoring subjects, their generalizability and instructional relevance appears questionable. As a result, the current investigation sought to use the entire range of achievement orientation scores present in a sample of college students and can be seen as both an extension and attempted replication of the previous Domino findings. The current investigation was naturalistic in design and used student ratings

as measures of teacher directiveness. As a result, it was possible to examine the interaction effects between both mean and perceived directiveness. Separate multiple regression analysis were conducted for each measure of directiveness with the variables sex, age, year in college, and leader sex entered as covariates. The dependent measures employed were grades, teacher ratings and satisfaction. Individual scales of the teacher rating form and satisfaction measure were also analyzed. The particular research questions were as follows:

(1) How does achievement via conformance interact with mean teacher directiveness to affect grades, teacher ratings and satisfaction?

(2) How does achievement via independence interact with mean teacher directiveness to affect grades, teacher ratings and satisfaction?

(3) How does the combination of achievement via conformance and achievement via indipendence utilized in the Domino studies interact with mean teacher directiveness to affect grades, teacher ratings and satisfaction?

These three questions were the same for the second analysis but perceived directiveness was substituted for mean directiveness.

CHAPTER IV

METHOD

Subjects

University students and their instructors were utilized as subjects in the current investigation. Students were enrolled in an Introductory Child Development course in the Faculty of Education. The course was compulsory for Education students and consisted of two large sections. Students in each section attended two instructional sessions (1 hr. 20 min. each) each week. One session, with an approximate class size of 200 students, was taught by the professor for the course using a lecture format. The other session, with class size of approximately 10-15 students, was taught by graduate teaching assistants. Lectures and the small group sessions, referred to as seminars, were quite independent of each other. The format and content for the seminar sessions was the responsibility of the individual instructor (teaching assistant) with 40% of the students' total-grade being determined by performance in the seminar sessions.

The focus of the current investigation was on the seminar sessions since these could be taught comfortably using either a directive or non-directive approach. (The nature of the course material also lent itself easily to being taught in either a nondirective or directive manner.) Informal observation and consultation with the instructors revealed variety in instructional focus and performance assessment. The twelve instructors, six males and six females, comprised the entire seminar session teaching staff. Each instructor taught from one to three

seminar sessions. Enrollment in seminars, except for students who enrolled late, appeared to have been quite random, as students were not aware of who their seminar instructor would be prior to their first session. Although the course was at an introductory level and most students were in their first year, approximately 45% of the students were in a more advanced year in university.

Instrumentation

Student Perception of Teacher Style (SPOTS) scale (revised)

The SPOTS scale was developed by Tuckman (1968) as a prerequisite to his investigation of the relationship between teacher style and student characteristics. According to Tuckman, the choice of a student measure as a means of obtaining a description of teacher style, is quite pragmatic in that a student rating scale can be administered in simple fashion and can be used to assess the teaching style of a large number of teachers without the utilization of observers or raters. In addition, the scale would have the properties of an ordinal scale and therefore could be readily analyzed with statistical techniques.

The revised SPOTS scale is a 17 item instrument designed to measure teacher directiveness and was constructed from an original 32 item scale. According to Tuckman the original 32 item scale was reduced to a more compact, internally consistent and relatively purer measure of teacher directiveness.

Acceptable reliability was demonstrated by means of a measure of internal consistency and a measure of interjudge reliability. Internal consistency was established by correlating the mean SPOTS score for each

of the 32 items with the grand mean SPOTS score for each instructor. Of these 32 items, 25 correlated significantly with this score and correlations ranged from .45 to .91. Interjudge reliability was demonstrated by ranking each student according to the agreement of his SPOTS ratings with the mean SPOTS rating for each instructor and then correlating the various rankings with the mean SPOTS for each teacher. Correlations ranged from .95, for rankings between 1 and 4, to .69 for students who were ranked tenth.

Factor analysis resulted in seven factors with one major factor consisting of 13 items which indicated an "authoritarian-tradition-orientation" of teacher directiveness. These 13 items also had significant correlations with the total SPOTS score and along with four other items, which also correlated highly with the total SPOTS score, were used to construct the 17 item revised SPOTS scale.

Concurrent validity was assessed by correlating the SPOTS scale with two observer scales (Teacher Style Checklist and Observer Rating Scale). Correlations were generally fairly low and according to Tuckman indicated that observers and students did not perceive teachers similarly. Tuckman cited several reasons for the discrepancy between the measures: 1) students based their judgment on different behaviors 2) students tended to base their judgments on their total experience within the class and as a result their ratings clustered around the midpoint. Observers, however, did not hesitate to use the extremes in rating. Tuckman concluded that the SPOTS scale appeared worthy for his own study and future research.

> Overall, the SPOTS appeared to satisfy the five criteria suggested by Remmers (1963) for judging the adequa-

> cy of student rating scales. The scale showed (a) objectivity, it yielding verifiable and reproducible data; (b) reliability, it was consistent over judges; (c) sensitivity, it discriminated between teachers and teaching styles; (d) relevance, it was related to the construct of directiveness (as evidenced by its relation to the ORS and further strengthened by the factor analysis), (e) utility, it was high in efficiency and practicality. (Tuckman, 1968, p. 65)

For the present study 15 of the 17 items of the revised SPOTS scale were utilized, as two did not appear to be appropriate to the situation. For the current investigation, students rated their instructors on a 15 item scale.

Achievement orientation--California Psychological Inventory: Achievement via Conformance (Ac), and Achievement via Independence (Ai)

Ac and Ai, two subscales of the California Psychological Inventory, are described as measures of achievement potential and intellectual efficiency. According to Gough (1957), the Ac scale identifies "those factors of interest and motivation which facilitate achievement in any settings where conformance is a positive behavior" (p. 11). The Ac scale consists of 38 items. The Ai scale is said to identify "those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors" (p. 11). The Ai scale consists of 32 items. Five items are common to both scales. The response format for the scales is "true" or "false". Test-retest reliabilities for the Ac scale are reported as .73 for high school males and .60 for high school females. For Ai, test-retest reliabilities for high school males are reported as .57 and for females as .63. Considerable data pertaining to the validity of the two scales is presented by Megargee (1972, p. 72-80). For the current investigation, one item utilizing the word American was changed to read Canadian instead.

Teacher Rating Form

The teacher rating form (TRF) utilized in the current investigation was developed by Hildebrand and Wilson (1970). Factor analysis of 91 items (reduced from an initial item pool of 158) describing the teaching of 338 teachers resulted in five factors. Only items with factor coefficients greater than .40 were retained and analyzed further to determine the consistency and reliability of the scales. According to Hildebrand and Wilson, the scales held together very well with alpha reliabilities ranging from .80 to .89. The scales are conceptualized as follows:

> Scale 1, Analytic/Synthetic Approach, is scholarship, with emphasis on breadth, analytic ability, and conceptual understanding.
>
> Scale 2, Organization/Clarity, is skill at presentation, but is subject-related, not student-related, and is not merely rhetorical skill.
>
> Scale 3, Instructor-Group Interaction, is rapport with the class as a whole, sensitivity to class response, and skill at securing active class participation.
>
> Scale 4, Instructor-Individual Student Interaction, is mutual respect and rapport between the instructor and the individual student.
>
> Scale 5, Dynamism/Enthusiasm, is the flare and infectious enthusiasm that comes with confidence, excitement for the subject, and pleasure in teaching. (Hildebrand & Wilson, 1970, p. 11)

Each of the 36 items of the rating form was rated on a scale of (1-5) with high scores being favorable and low scores being unfavorable.

Student Satisfaction Scale (SSS)

The Student Satisfaction Scale (SSS) was developed by McCann (1978) and is intended to measure both satisfaction with the course and satisfaction with the instructor. Five items deal with satisfaction with the instructor and the other five items deal with satisfaction with the

course. All items are rated on a nine-point scale, with high scores being positive and low scores being negative. At the time of use, no psychometric data was available. The scale was analyzed along the course and instructor dimensions.

Format of the questionnaires

A questionnaire booklet was handed out to all participating students (see Appendix A). The first page of the questionnaire outlined the nature of the research, asked students for their cooperation, and ensured them of the anonymity of their responses. Section I continued the Ai and Ac scales from the California Psychological Inventory; Section II contained the Teacher Rating Form (TRF); Section III contained the Student Perception of Teaching Style (SPOTS) scale; Section IV contained the Student Satisfaction Scale (SSS).

Procedure

The data was collected in April, 1978. The questionnaire booklet was administered in the students' last lecture session of the year. The lecture class was utilized for practical reasons, (students would be more likely to attend, administration time would be reduced, and time had been allotted for evaluation purposes) and because it was assumed that students would be less inhibited in evaluating their seminar instructor when the instructor was not present. The professor for the course briefly outlined the nature of the research and urged the students to participate, but stated they were under no obligation to do so and could leave if they so desired. While the envelopes containing the questionnaire and computer answer sheets were being distributed the researcher

explained the procedure for putting information on the outside of the envelope. Students were asked to enter their age, sex, seminar instructors name, and year in university in designated courses on the outside of the envelope. They were also asked to place their student number and/or name on the removable labels affixed to the outside center of the envelope. Upon completion of the questionnaire booklet, students were asked to place their booklets and answer sheets in the envelopes and seal them. (In one section, due to the fact that appropriate scoring pencils were not available, students answered directly on the test booklet. These answers were later transferred to computer sheets.)

The sealed envelopes were collected and then stored until such a time as seminar grades for students became available. When these became available, each students' seminar grade was recorded on the envelope and the identification tag removed. This was done by an individual not associated with the course. Only those students, for whom complete data was available, were utilized as subjects in the analysis.

Statistical Analysis

Domino's 1971 study used an extreme groups design (high Ac-low Ai, low Ac-high Ai) to test for the interaction of teaching style and achievement orientation. In his study a correlation of -.83 was found between Ac and Ai (correlations cited in the CPI manual are .38 for males and .39 for females). To examine the effect found by Domino, Ac and Ai were converted to standard scores and Ai subtracted from Ac to form the aptitude variable AcAi. This variable can be seen as a measure of relative achievement via conformance. Two measures of directiveness were utilized, perceived directiveness (P. Dir.) and mean directiveness (M. Dir.).

In the perceived directiveness condition, directiveness was seen to be each student's actual SPOTS score, while in the mean directiveness condition, the class mean SPOTS score was substituted for each students' SPOTS score. Separate analyses were conducted for both perceived and mean directiveness.

In keeping with both the quasi-experimental nature of the investigation and Cronbach and Snow's (1977) contention that regression analyses is the preferred approach for interaction research, the obtained data were analyzed using the Multiple Regression Program of the Statistical Package for the Social Sciences (Nie, 1975). A stepwise regression in conjunction with a preestablished hierarchy among sets of independent variables was run for each dependent variable. This option was chosen for several reasons; to allow the covariate or control variables to enter the regression equation first, a priori specification of variables within sets of variables did not seem justified and, to maximize the predictive ability of each regression equation. In order to allow all independent variables to be eligible for inclusion within the regression equation, the inclusion parameters (F values and tolerance levels) were set very low.

The first set of variables entered were the covariates, Sex (Sx), Age (Ag), Year in University (Yr) and Instructor Sex (ISx). The program automatically determined the entry order of variables within the set. The second set of variables to enter the regression equation were the directiveness and aptitude variables. By first removing the main effects of aptitude and directiveness, the interaction term (a simple product of the variables entered in step two) entered in step three is

unconfounded [illegible] these simpler effects.

The gen[illegible] of the regression equations used in the current investigation [illegible] follows:

$$Y=(b_1Ag+b_2Sx+b_3Yr+b_4Sx)+(b_5Dir+b_6Ap)+(b_7Ap/Dir)$$

where Y=[illegible]pendent variable

Ag=[illegible]ge

[illegible]ex

[illegible]=Year in University

L[illegible]=Leader Sex

Di[illegible]Directiveness

Ap[illegible]ptitude

Ap/Dir=Aptitude-Directiveness interaction

Stepwise regression analysis was performed on each of the following dependent varia[illegible]: grades, overall satisfaction, course satisfaction, instructor sat[illegible]action, overall teacher rating, and the five independent scales of the teacher rating form. The statistical significance of a set entered into the regression equation was tested with the following F test:

$$F=\frac{(R^2Y.AB-R^2Y.A)/K_B}{(1-R^2Y.ABC)/(N-K-1)}$$

where

K=total number of independent variables in all sets

K_B=number of independent variables in the subset for which the significance test is made

N=total sample size

The statistical significance of individual independent variables within sets is not meaningful unless the F test for the set is significant.

Consequently F tests for individual variables were conducted only when the F test for the set was significant (Cohen & Cohen, 1975). This F-test was as follows:

$$F = \frac{Sr_1^2/1}{1-R^2(N-K-1)}$$

where

R^2=the multiple squared correlation

Sr^2=increment due to the independent variable

N=total sample size

K=number of independent variables

CHAPTER V

RESULTS AND DISCUSSION

Overview

Discription of sample

Of the 241 questionnaires collected, 28 could not be utilized because of missing data. The 213 useable questionnaires constituted approximately 53% of the student population enrolled in the course. Of these, approximately 66% were female and 34% were male. Fifty-five percent of the students were in their first year of university, 31% were in their second year; seven percent were in their third year and seven percent were in their fourth year or more. The relevant descriptive statistics for the sample are provided in TABLE 2. Except for age, year, and grade all scores are based on the mean item score for the particular instrument utilized. Descriptive statistics are not presented for interaction variables, classification variables or transformed variables.

In order to compare the twelve instructors, descriptive statistics were also calculated for each individual instructor's score on the following variables: perceived directiveness (PDIR), overall teaching rating (TRF_0), overall satisfaction (SAT_0) and grades. These are presented in TABLE 2. Examination of the statistics for each instructor revealed that limited variability was present with respect to the dependent measures but was even more pronounced with ratings of directiveness. Somewhat contrary to expectations, the level of directiveness did not vary considerably among the instructors, with the majority of instructors apparently employing a fairly nondirective style of teaching. As a result

TABLE 2: Descriptive Statistics for the Sample

Variable	Mean	Standard Deviation	Minimum	Maximum
AGE	20.94	4.50	17	41
YEAR	1.71	1.10	1	9
Ac	.70	.12	.38	.95
Ai	.65	.12	.33	.87
SAT_0	5.84	1.95	1.20	9.00
SAT_1 *	5.97	2.05	--	--
SAT_2 *	5.70	1.95	--	--
TRF_0	3.34	.65	1.00	4.86
TRF_1	3.18	.68	1.00	4.71
TRF_2	3.25	.66	1.00	4.71
TRF_3	3.30	.70	1.00	5.00
TRF_4	3.54	.76	1.00	5.00
TRF_5	3.46	.81	1.00	5.00
GRADE	6.97	1.46	1.00	9.00
PDIR	6.06	1.02	2.39	8.27

N=213

Ac -Achievement via Conformance
Ai -Achievement via Independence
SAT_0 -Overall Satisfaction
SAT_1 -Satisfaction with Instructor
SAT_2 -Satisfaction with Course
TRF_0 -Overall Teacher Rating Form
*(minimum and maximum scores not calculated)

TRF_1-Analytic-Synthetic Scale
TRF_2-Organization-Clarity
TRF_3-Instructor-Group Interaction Scale
TRF_4-Instructor-Individual Interaction Scale
TRF_5-Dynamism-Enthusiasm Scale
PDIR-Perceived Directiveness

of this somewhat restricted range in instructional style, the probability of the occurance and detection of significant ATI's may have been reduced.

Simple correlations among variables

Correlations among the dependent and independent variables utilized in the current investigation are presented in the abridged correlation matrix displayed in TABLE 4. Interaction terms were not included in the matrix since their interpretation was not seen to be meaningful. Correlations were deemed to be significant at, or less than the .05 level and were computed using "Subprogram Pearson Corr: Pearson Product-Moment Correlation Coefficients" from the SPSS (Statistical Package for the Social Sciences) computer program. In the following analysis it must be kept in mind that these are zero order correlations and that no controls are in effect for other variables. The correlations reflect the strength of the relationship between two variables, and when squared, reflect the proportion of variance in one variable explained by the other. The correlations among the variables are discussed in the context of specific groups of variables, ie. covariates, aptitudes, treatments and dependent measures.

The variables, sex, age, year, and leader sex comprise the group of variables considered as covariates in the multiple-regression analyses. Sex correlated .28** with age, .15* with year, .13* with leader sex and -.20* with Ai (*p is less than .05 and **p is less than .01). Interpretation in accordance with the coding procedures employed for sex, suggests that male students in the investigation tended to be older, were in a more advanced year in college and were matched more often with an instructor of their own sex. Females tended to score higher on the

TABLE 3: Descriptive Statistics for Individual Instructors

Instructor	Variable												N
	PDIR				GRADE				TRF_0				SAT_0				
	Mean	S.D.	Min.	Max.	Mean	S.D.	Min.	Max.	Mean	S.D.	Min.	Max.	Mean	S.D.	Min.	Max.	
1	6.54	.76	4.40	7.87	6.89	1.45	5.00	9.00	3.42	.79	2.22	4.50	5.52	2.21	2.20	8.00	9
2	6.33	.73	5.00	7.47	7.09	.97	6.00	9.00	3.35	.63	2.44	4.67	6.28	1.96	3.10	9.00	22
3	6.30	.62	5.07	7.93	6.71	.99	5.00	9.00	3.61	.62	2.11	4.47	6.79	1.37	4.10	9.00	17
4	6.67	.75	5.33	8.27	6.95	1.97	1.00	9.00	3.51	.53	2.64	4.56	6.15	2.00	1.70	8.80	19
5	5.77	.69	4.87	7.00	7.24	1.38	4.00	9.00	3.22	.49	2.25	4.39	5.21	1.67	1.80	8.60	21
6	5.19	.88	2.86	7.00	7.50	.80	6.00	9.00	3.02	.50	2.28	4.06	4.73	1.83	1.60	8.00	27
7	4.69	1.25	2.39	6.86	5.90	1.71	2.00	9.00	2.78	.71	1.36	4.61	4.40	2.04	1.20	8.50	20
8	6.23	.69	5.20	8.00	7.11	.74	6.00	8.00	3.64	.50	2.94	4.64	6.63	1.41	3.80	8.60	19
9	6.05	.54	5.20	6.87	8.20	1.20	6.00	9.00	3.28	.53	2.06	4.28	5.57	1.51	1.50	8.00	15
10	6.76	.53	5.73	7.53	7.19	1.11	5.00	9.00	3.31	.52	2.17	4.19	5.67	2.00	1.50	8.20	16
11	6.24	1.09	4.08	7.87	7.38	1.19	6.00	9.00	3.71	.83	2.14	4.86	6.26	.92	1.90	8.50	8
12	6.81	.52	5.93	8.21	5.90	2.05	2.00	9.00	3.72	.69	1.00	4.42	7.39	.88	5.70	9.00	20

PDIR-Perceived Directiveness
TRF_0-Overall Teacher Rating Form
SAT_0-Overall Satisfaction

achievement via independence measure. Age correlated significantly with year in college (.30**), overall teacher ratings (.15*), grades (.19**) and ratings on the instructor-individual interaction scale (.20**). The substantial correlation between age and year in college is quite logical and expected as both increase concomitantly. The other three correlations are suggestive of some interesting findings with respect to age. Older students tended to obtain higher grades and rated their instructors more favorably overall and with respect to instructor-individual interaction. Year in college correlated significantly with grades (.17*) and ratings on the instructor-individual interaction scale and would tend to suggest that more academically advanced students received higher grades and may have had more individual contact with their instructor. Since age and year in college correlated significantly with each other and with the same dependent measures, their combined effect may be considerably diminished within a multiple-regression analysis. Leader sex correlated significantly with mean directiveness (.54*), perceived directiveness (.37**), overall teacher ratings (.17*), overall satisfaction (.19**), instructor-group interaction ratings (.22**), instructor-individual interaction ratings (.25**), dynamism-enthusiasm ratings (.23**), satisfaction with instructor (.20**) and satisfaction with course (.17**). Interpretation of these correlations suggests that male instructors were less directive, were perceived as being less directive and received higher ratings on all the following dependent measures: overall teacher ratings, overall satisfaction, instructor-group interaction ratings, instructor-individual interaction ratings, dynamism-enthusiasm ratings, satisfaction with instructor and satisfaction with course. The foregoing analysis suggests

TABLE 4

Abridged Correlation Matrix

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. Sex	--	.28**	.15*	.13**	.09	-.20*	.11	.01	.00	-.04	-.11	.09	-.01	.00	-.01	.02	-.02	-.05	-.08
2. Age		--	.30**	.04	.04	-.05	.09	.03	.15*	.09	.19**	.08	.12	.12	.12	.20**	.13	.07	.12
3. Year			--	.07	.10	.11	.02	.03	.09	.10	.17*	.00	.07	.04	.06	.18**	.12	.10	.09
4. LdSex				--	.01	-.01	.54**	.37**	.17*	.19**	.03	.00	.06	-.05	.22**	.25**	.23**	.20**	.17*
5. Ac					--	.31**	-.01	.09	.12	.18**	.22**	.58**	.14*	.12	.10	.10	.07	.17*	.19**
6. Ai						--	-.06	-.03	-.05	-.03	.14*	-.59**	-.09	-.06	-.05	-.02	.00	-.03	-.02
7. MDIR							--	.65**	.37**	.38**	.00	.04	.25**	.12	.42**	.38**	.46**	.39**	.35**
8. PDIR								--	.63**	.63**	.13	.11	.47**	.40**	.66**	.64**	.61**	.65**	.58**
9. TRF_0									--	.74**	.05	.14*	.87**	.87**	.92**	.90**	.93**	.75**	.70**
10. SAT_0										--	.09	.18**	.61**	.66**	.65**	.70**	.71**	.97**	.97**
11. Grades											--	.07	.09	.00	.02	.12	.01	.06	.11
12. AcAi												--	.19**	.14*	.13	.10	.06	.17*	.18**
13. TRF_1													--	.80**	.74**	.68**	.73**	.59**	.59**
14. TRF_2														--	.75**	.67**	.74**	.65**	.63**
15. TRF_3															--	.81**	.81**	.67**	.61**
16. TRF_4																--	.85**	.72**	.64**
17. TRF_5																	--	.73**	.66**
18. SAT_1																		--	.90**
19. SAT_2																			--

*p is less than .05; **p is less than .01.

LdSex=Leader Sex
Ac=Acheivement via Conformance
Ai=Acheivement via Independence
MDIR=Mean Directiveness
PDIR=Perceived Directiveness
TRF_0=Overall Teacher Rating Form
SAT_0=Overall Satisfaction
AcAi=Ac minus Ai

TRF_1=Analytic-Synthetic
TRF_2=Organization-Clarity
TRF_3=Instructor-Group Interaction
TRF_4=Instructor-Individual Interaction
TRF_5=Dynamism-Enthusiasm
SAT_1=Satisfaction with Instructor
SAT_2=Satisfaction with Course

that several of the variables to be considered as covariates are in fact significantly related with dependent measures and as a result, might possibly be a source of confounding variation if left uncontrolled.

The three aptitude measures employed were achievement via conformance (Ac), achievement via independence (Ai) and the variable AcAi (created by subtracting Ai from Ac to form a relative measure of achievement orientation). Ac correlated significantly with Ai (.31**), overall satisfaction (18**), grades (.22**), AcAi (.58**), ratings on the analytic-synthetic scale (14*), satisfaction with instructor (.17*) and satisfaction with course (.19**). The .31** correlation between Ac and Ai is very close to the .38 for males and .39 for females reported in the CPI manual (Gough, 1957). This is consistent with the intent of the current investigation to utilize a sample of subjects with normal Ac and Ai scores. Since Ac was used to create AcAi, the substantial correlation between the two measures was expected. The significant correlation with grades appears to be in keeping with the intent of the Ac scale to predict achievement. The other three correlations do, however, appear to warrant further explanation since examination of the descriptive statistics for the sample revealed that the instructional style of most instructors tended to be nondirective in nature. Students scoring higher on the Ac aptitude rated instructors more favorable on the analytic-synthetic scale, and were more satisfied as indicated by all three satisfaction measures. According to the intent of the Ac scale, one would not have expected these students to have been more satisfied with generally nondirective instruction. The Ai scale correlated significantly with AcAi (-.59**) and grades (.14*). The substantial correlation with the

AcAi variable is, as with Ac before, the result of the creation of the AcAi variable, while the correlation with grades is in keeping with the intent of the Ai scale to predict achievement. Contrary to expectations, none of the correlations between Ai and the teacher rating scales and satisfaction were significant. The AcAi variable correlated significantly with overall teacher ratings (.14*), overall satisfaction (.18**), analytic-synthetic ratings (.19**), organization-clarity ratings (.14*), satisfaction with instructor (.17*) and satisfaction with course (.18**). The AcAi variable is a measure of relative achievement orientation via conformance from which the effects of general motivation towards achievement have been removed (high scores on both scales as well as low scores on both scales would cancel each other leaving those students with uneven aptitudes). Students high on Ac and low on Ai tended to be more satisfied overall and more satisfied with both the course and instructor. They also tended to rate their instructors more favourably overall and on the analytic-synthetic and organization-clarity scales. Again, these results are contrary to expectations in that one would have expected the opposite aptitude pattern to correlate significantly with morale outcome measures since instruction generally tended to be nondirective in nature.

Mean directiveness and perceived directiveness comprise the treatment category of variables. Mean directiveness and perceived directiveness were, as was expected, significantly correlated (.65**). Except for grades and the ratings on the organization-clarity scale, all dependent measures were significantly correlated with mean directiveness suggesting that nondirective instructors tended to be rated more favorably and that students tended to be more satisfied with nondirective instruction. The

correlations between perceived directiveness and the dependent measures were substantially higher than those for mean directiveness with only the correlation for grades not attaining significance. This increase in the size of correlations is consistent with findings in the McCann and Fisher study (1977) and is in keeping with their contention that perceived directiveness is somewhat independent of actual or mean directiveness.

The dependent measures employed were grades, overall satisfaction, satisfaction with the course, satisfaction with the instructor, overall teacher ratings and ratings on the five subscales of the teacher rating form: analytic-synthetic, organization-clarity, instructor-group interaction, instructor-individual interaction and dynamism-enthusiasm. Except for grades, the intercorrelations among the dependent measures were all significant and would all appear to be representative of the morale category. Grades, the only cognitive measure employed, did not correlate significantly with any of the other dependent measures.

From the foregoing correlational analysis, several interesting and somewhat contrary findings appear to be present. The correlations between Ac and grades and Ai and grades, although not substantial, are significant and appear to be supportive of the intent of both scales to predict academic achievement. Although quite consistent with Megargee's (1972) review of findings from other studies investigating the relationship between the two scales and achievement, the respective size of the Ai and not the Ac scale to correlate more strongly with achievement in a college setting where instructional style tended to be nondirective.

These correlations are, however, quite discrepant from those presented in the 1971 Domino study where Ai and Ac were found to correlate with grades .30 and -.30 respectively. Not only are Domino's correlations discrepant from those found in the present investigation, they are substantially different from findings in the studies reviewed by Megargee (1972) and again, point to the apparent uniqueness and unrepresentativeness of the sample utilized by Domino (1971). Although Megargee (1972) reviews the Domino findings as being one of the more substantial sources of validity with respect to the differential predictive ability of the Ac and Ai scales (prediction of achievement in settings rewarding conformity versus prediction of achievement in settings rewarding independence), in light of this apparent discrepancy between the correlations found in Domino's study and those found by other researchers, this differential predictive ability would appear to be somewhat suspect. As noted previously, the correlation between Ac and Ai in the current investigation is quite close to that cited in the CPI manual (Gough, 1957). Both are, however, very discrepant with the -.83 correlation between Ai and Ac cited in the Domino (1971) study.

The correlations between variables to be considered as covariates (sex, age, year in college, and leader sex) and several of the dependent measures were significant and as a result are in keeping with the intent of the current investigation to control for their effects. Mean directiveness and perceived directiveness were, as was expected, significantly correlated but appear to be related to achievement and morale in different degrees. Multiple regression analyses were employed to examine the relationships among variables in more detail. These will now be

presented.

Multiple Regression Analysis

For each of the ten dependent measures employed in the following regression analyses, the most optimal regression equation was generated for the particular combination of independent variables entered in the equation. The independent variables within the two sets (designated as covariates and main effects), were entered in stepwise fashion, and as a result, the optimal order of these variables was automatically selected. For example, if two variables were significantly correlated with each other and the dependent measure, the variable accounting for the most variance was entered first, with the other variable entering later and accounting for only any unique variance. To facilitate tabular presentation and comparison, the independent variables are presented in an identical order for each dependent measure. However, the optimal order of entry is in accordance with the size of the computed F-values for the independent variables. Those analyses exploring the relationship between mean directiveness and the student aptitudes will be presented first and will then be followed by those analyses in which the relationship between perceived directiveness and the student aptitudes were explored. Results for the increments attributable to the independent measures (Sr^2) have been rounded to three decimal places while the F-test values have been rounded to two decimal places. Where the F-test for the set of independent variables was not significant, F-test values are not presented for the individual independent variables. Since the set of covariate variables was entered into the regression equation first,

the amount of variance accounted for by the set of covariate variables is identical for regression equations in which the dependent measure is the same. For example, the amount of variance accounted for by the set of covariate variables is the same for all six regression equations in which grades is the dependent measure. The amount of variance accounted for by each of the covariate variables is also identical when the dependent measure is the same. Only the computed F-value will change since the size of the denominator in the F-ratio is contingent upon the total variance in the dependent measure explained by all variables in the regression equation. It should, however, be noted that in instances where the regression equation accounted for similar amounts of variance, the results and discussions pertaining to the contribution of the covariates would almost be identical. An overview of the multiple regression analyses (found in TABLE 5 to TABLE 10) reveals that the pattern of relative significance is identical for all regression equations in which the directiveness variable is the same. For example, for all three regression equations in which grades is the dependent measure and mean directiveness is the treatment variable, the relative size of the computed F-values is the same. Discussion of the amount and significance of the variance accounted for the covariates entered into the regression equations for each of the three students aptitudes would, as a result, be redundant. Therefore, the significance and amount of variance in the dependent measure accounted for by the covariates will be discussed only twice, in the Ac/MDIR and Ac/PDIR analyses.

TABLE 5

Results of Multiple Regression Analysis (Mean Directiveness/Ac)

Model	Sr^2 GRADES	F	Sr^2 TRF_0	F	Sr^2 TRF_1	F	Sr^2 TRF_2	F	Sr^2 TRF_3	F
[illegible]ates	.088	5.12**	.056	3.48**	.022	1.23	.018	.98	.071	4.53**
[illegible]	.036	8.45**	.021	5.26*	.014	----	.014	----	.013	3.29
Sex	.032	7.38**	.005	1.25	.003	----	.001	----	.006	1.52
Year	.018	4.31*	.002	.49	.001	----	.000	----	.002	.44
Leader Sex	.001	.34	.028	6.92**	.003	----	.003	----	.050	12.87**
Main Effects	.034	3.99*	.117	14.47**	.079	9.05**	.038	4.09*	.127	16.28**
Ac	.034	7.83**	.010	2.44	.016	3.67	.012	2.51	.009	2.40
MDIR	.001	.16	.107	26.51**	.063	14.43**	.026	5.67*	.118	30.16**
ATI										
Ac/MDIR	.000	.07	.000	.01	.001	.27	.000	.01	.000	.10
R	.350		.416		.319		.236		.446	
R^2	.122		.173		.102		.056		.199	

*p is less than .05; **p is less than .01; Ac=Achievement via Conformance; MDIR=Mean Directiveness; Ac/MDIR=Interaction between Ac and MDIR; TRF_0=Overall Teacher Rating Form; TRF_1=Analytic-Synthetic; TRF_2=Organization-Clarity; TRF_3=Instructor-Group Interaction.

TABLE 5 (cont'd)

Results of Multiple Regression Analysis (Mean Directiveness/Ac)

Full Model	Sr^2	TRF_4 F	Sr^2	TRF_5 F	Sr^2	SAT_0 F	Sr^2	SAT_1 F	Sr^2	SAT_2 F
Covariates	.115	7.39**	.078	5.30**	.059	3.73**	.055	3.44**	.062	3.92**
Age	.036	9.19**	.013	3.61	.008	2.12	.003	.73	.013	3.21
Sex	.006	1.52	.007	1.96	.010	2.42	.002	.59	.019	4.73*
Year Leader	.012	3.09	.006	1.67	.005	1.26	.008	2.04	.003	.87
Sex	.061	15.76**	.052	13.97**	.036	9.14**	.041	10.41**	.027	6.87**
Main Effects	.085	10.94**	.163	22.03**	.134	17.04**	.132	16.70**	.123	15.43**
Ac	.005	1.32	.003	.69	.026	6.68**	.023	5.86*	.027	6.80**
MDIR	.080	20.56**	.160	43.37**	.108	27.39**	.109	27.54**	.096	24.06**
ATI										
Ac/MDIR	.000	.05	.000	.09	.001	.32	.002	.47	.001	.16
R	.448		.492		.440		.434		.431	
R^2	.201		.242		.194		.189		.186	

*p is less than .05; **p is less than .01; Ac=Achievement via Conformance; MDIR=Mean Directiveness; Ac/MDIR=Interaction between Ac and MDIR; TRF_4=Instructor-Individual Interaction; TRF_5=Dynamism-Enthusiasm; SAT_0=Overall Satisfaction; SAT_1=Satisfaction with Instructor; SAT_2=Satisfaction with Course.

Mean directiveness and Achievement via Conformance (Ac)

Results. The results of the multiple regression analysis with mean directiveness as the treatment variable and Ac as the student aptitude are presented in TABLE 5. With grades as the dependent variable, the variance accounted for by the combined effect of all variables was 12.2%. The F-test values for both sets of variables (covariates and main effects) were significant and as a result, the significance of each independent variable within the equation was tested. The set of covariate variables accounted for 8.8%** of the variance in grades (*p is less than .05 and **p is less than .01). The increments attributable to age, sex, and year in college were all found to be significant and respectively accounted for 3.6%**, 3.2%**, and 1.8%* of the variance in grades. The variance accounted for by the set of main effect variables was 3.4%* and although substantially less than that accounted for by the set of covariate variables, was significant. However, examination of the increments attributable to the individual variables within the set, revealed that nearly all of the variance was accounted for by Ac and that the F-value for mean directiveness was quite insignificant. The F-value for the interaction term Ac/MDIR was also insignificant since the interaction term did not account for any additional variance beyond that accounted for by the other two sets of variables.

The variance accounted for by the combined effect of all variables with overall teacher ratings (TRF_0) as the dependent measure was 17.3%. The F-test values for both sets of variables were significant and consequently the increment attributable to each independent variable within the equation was tested for significance. The set of covariate variables

accounted for 5.6%** of the variance in overall teacher ratings. The increments attributable to leader sex and age were significant and respectively accounted for 2.8% and 2.1% of the variance in overall teacher ratings. The F-values for sex and year in college were insignificant. The variance in overall teacher ratings accounted for by the set of main effect variables was 11.7%**. Examination of the increments attributable to the individual variables in the set revealed that mean directiveness accounted for 10.7%** of the variance in overall teacher ratings and that the increment attributable to Ac was insignificant. The interaction term, Ac/MDIR, did not account for any significant increase in variance.

With ratings on the analytic-synthetic subscale (TRF_1) as the dependent measure, the variance accounted for by the combined effect of all variables was 10.2%. The F-test value for the set of covariate variables was insignificant and as a result, the contribution of individual variables within the set was not explored further. The set of main effect variables accounted for a significant 7.9%** of the variance in ratings on the analytic-synthetic subscale. Only the 6.3%** increment attributable to mean directiveness was found to be significant. The interaction term, Ac/MDIR, did not account for any significant increase in variance.

With ratings on the organization-clarity subscale (TRF_2) as the dependent measure, the variance accounted for by the combined effect of all variables was 5.6%. The F-test value for the set of covariate variables was insignificant and consequently the contribution of individual variables within the set was not explored further. The set of main effects variables accounted for 3.8%* of the variance in ratings on the

organization-clarity subscale. Only the 2.6% increment attributable to mean directiveness, was found to be significant. The interaction term Ac/MDIR, did not account for any significant increase in variance.

The variance accounted for by the combined effect of all variables, with ratings on the instructor-group interaction subscale (TRF_3) as the dependent measure was 19.9%. The amounts of variance accounted for by the sets of covariate and main effect variables were both significant and were respectively 7.1%** and 12.7%**. Within the set of covariate variables, only the 5.0%** increment in variance attributable to leader sex was significant. Within the set of main effect variables only the 11.8%** increment in variance attributable to mean directiveness was significant. The interaction term Ac/MDIR, did not account for any significant increase in variance.

When ratings on the instructor-individual subscale (TRF_4) were employed as the dependent measure, the variance accounted for by the combined effect of all variables was 20.1%. The amounts of variance accounted for by the sets of covariate and main effect variables were both significant and were respectively 11.5%** and 8.5%**. Within the set of covariate variables, the increment in variance attributable to age was 3.6%** while that attributable to leader sex was 6.1%**. Within the set of main effect variables only the increment attributable to mean directiveness was 8.0%**. The interaction term, Ac/MDIR, did not account for any significant increase in variance.

The variance accounted for by the combined effect of all variables, with ratings on the dynamism-enthusiasm subscale (TRF_5) as the dependent measure was 24.2%. The significant amount of variance accounted for by

the sets of covariate and main effect variables were respectively 7.8%** and 16.3%**. Within the set of covariate variables, only the 5.2%** increment attributable to leader sex was significant. Within the set of main effect variables only the 16.0%** increment attributable to mean directiveness was significant. The interaction term, Ac/MDIR, did not account for any significant increase in variance.

When overall satisfaction ratings (SAT_0) were employed as the dependent measure, the variance accounted for by the combined effect of all variables was 19.4%. The significant amount of variance accounted for by the sets of covariate and main effect variables were respectively 5.9%** and 13.4%**. Within the set of covariate variables, leader sex accounted for a significant 3.6%** of the variance. Within the set of main effect variables, both mean directiveness and Ac accounted for significant increments in variance with the former accounting for 10.8% and the latter accounting for 2.6%. The interaction term, Ac/MDIR did not account for any significant increase in variance.

The variance accounted for by the combined effect of all variables, when ratings on the satisfaction with instructor subscale (SAT_1) were employed as the dependent measure was 18.9%. The significant amount of variance accounted for by the sets of covariate and main effect variables were respectively 5.5%** and 13.2%**. Leader sex accounted for 4.1%** of the variance while Ac and mean directivness respectively accounted for 2.3%* and 10.9%**. The interaction term Ac/MDIR, did not account for any significant increase in variance.

With ratings on the satisfaction with course subscale (SAT_2) as the dependent measure, the variance accounted for by the combined effect of

all variables was 18.6%. The significant amount of variance accounted for by the sets of covariate and main effect variables were respectively 6.2%** and 12.3%**. Within the covariate set of variables, both sex and leader sex were significant with respective increments of 1.9%* and 2.7%**. Within the main effect set of variables, both Ac and mean directiveness were significant with respective increments of 2.7%** and 9.6%**. The interaction term, Ac/MDIR, did not account for any significant increase in variance.

Discussion. The primary aim of the present analyses was to determine whether significant ATI's were present between mean directiveness and achievement via conformance. No evidence to support the contention that Ac would differentially predict achievement in conforming situations was found since within the regression equations, the interaction term, Ac/Ai, did not account for any significant amounts of variance in any of the ten dependent measures employed. As a result, further analysis was not pursued. If significant ATI's had been found, the nature of the interactive relationships would have been explored further.

Some interesting secondary findings did however, emerge with respect to other variables entered in the regression equations. Ac accounted for significant amounts of variance in grades when the effects of the covariates were controlled. Ac also accounted for significant amounts of variance in overall satisfaction (SAT_0), satisfaction with the instructor (SAT_1) and satisfaction with the course (SAT_2) when the effects of the covariate variables and mean directiveness were controlled. In both instances the correlations were positive: students scoring higher on the Ac scale obtained higher grades and were more satisfied as measured by

all three satisfaction measures. This finding is consistent with the intent of the Ac aptitude to predict achievement. Ac also appeared to be a successful predictor of student satisfaction, a finding which in the present setting, is contrary with the intent of the Ac scale. One would not have expected students scoring high in Ac to be more satisfied with instruction that was generally nondirective in nature.

Mean directiveness (with the effects of the covariate variables controlled) accounted for significant amounts of variance in all dependent measures except grades. All correlations were positive: more nondirective instructors were rated higher on all scales of the teacher rating form and all satisfaction measures. These findings are consistent with those of Tuckman (1968) who also found that students preferred nondirective instructors. They also point out that as an outcome measure, grades appear to be quite independent of mean directiveness and the affective outcome measures employed.

Several of the variables entered as covariates in the regression equation accounted for significant amounts of variance in dependent variables. Of the covariates, leader sex was the best predictor of overall teacher ratings (TRF_0), instructor-group interaction ratings (TRF_3), instructor-individual interation ratings (TRF_4) dynamism and enthusiasm ratings (TRF_5), overall satisfaction (SAT_0). All correlations were positive: male instructors were rated more favorably on the previous listed outcome measures. These findings can not, however, be taken as being very definitive since the total instructor sample size was only 12. Age appeared to be the second best predictor and accounted for

significant amounts of variance in grades, overall teacher ratings (TRF_0), and instructor-individual interaction ratings (TRF_4). Since the correlations were positive, it would appear that older students obtained higher grades, rated instructors more favorably on overall teacher ratings and interacted more with instructors. Sex accounted for significant amounts of unique variance in grades (with the effects of age controlled) and satisfaction with course (with the effects of leader sex controlled). In both instances the correlations were negative: female students obtained higher grades and were more satisfied with the course. Year in college accounted for a significant amount of unique variance in grades (with the effects of age and sex controlled). The correlation was positive: students in a more advance year in college obtained higher grades.

Mean directivenss and Achievement via Independence (Ai)

Results. The results of the miltiple regression analysis with mean directiveness as the treatment variable and Ai as the student aptitude are presented in TABLE 6. With grades as the dependent measure the regression equation accounted for 9.8% of the variance in grades. The set of main effect variables only accounted for .9% of the variance in grades, an amount which did not even approach significance. As a result, the individual effects of Ai and mean directiveness were not investigated. The interaction variable, Ac/MDIR, did not account for any significant increase in variance.

With overall teacher ratings (TRF_0) as the dependent measure, the regression equation accounted for 17.8% of the variance in ratings. The amount accounted for by the set of main effect variables was 10.9%**. The two variables within the set, Ai and MDIR, respectively accounted

TABLE 6

Results of Multiple Regression Analysis (Mean Directivness/Ai)

	GRADES		TRF_0		TRF_1		TRF_2		TRF_3	
Full Model	Sr^2	F	Sr^2	F	Sr^2	F	Sr^2	F	Sr^2	F
Covariates	.088	4.98**	.056	3.50**	.022	1.23	.018	.98	.071	4.52**
Age	.036	8.23**	.021	5.29*	.014	----	.014	----	.013	3.28
Sex	.032	7.18**	.005	1.26	.003	----	.001	----	.006	1.52
Year Leader	.018	4.19*	.002	.50	.001	----	.000	----	.002	.44
Sex	.001	.33	.028	6.96**	.003	----	.003	----	.050	12.84
Main Effects	.009	1.04	.109	13.58**	.071	8.08**	.029	3.13*	.119	15.24**
Ai	.009	----	.002	.50	.008	1.74	.002	.54	.002	.38
MDIR	.000	----	.107	26.65**	.063	14.41**	.026	5.71**	.118	30.10**
ATI										
Ai/MDIR	.001	.31	.012	3.09	.008	1.89	.016	3.42	.007	1.68
R	.313		.421		.317		.249		.444	
R^2	.098		.178		.101		.062		.197	

*p is less than .05; **p is less than .01; Ai=Achievement via Independence; MDIR=Mean Directiveness; Ai/MDIR=Interaction between Ai and MDIR; TRF_0=Overall Teacher Rating Form; TRF_1=Analytic-Synthetic; TRF_2=Organization-Clarity; TRF_3=Instructor-Group Interaction.

TABLE 6 (cont'd)

Results of Multiple Regression Analysis (Mean Directiveness/Ai)

Full Model	TRF_4 Sr^2	TRF_4 F	TRF_5 Sr^2	TRF_5 F	SAT_0 Sr^2	SAT_0 F	SAT_1 Sr^2	SAT_1 F	SAT_2 Sr^2	SAT_2 F
Covariates	.115	7.45**	.078	5.36**	.059	3.62**	.055	3.35*	.062	3.80*
Age	.036	9.26**	.013	3.65	.008	2.06	.003	.71	0.13	3.11
Sex	.006	1.53	.007	1.98	.010	2.34	.002	.58	.019	4.58*
Year	.012	3.11	.006	1.68	.005	1.22	.008	1.99	.003	.84
Leader Sex	.061	15.88**	.052	14.11**	.036	8.86**	.041	10.13**	.027	6.65**
Main Effects	.081	10.46**	.160	21.91**	.109	13.27**	.110	13.54**	.097	11.83**
Ai	.001	.20	.000	.01	.001	.34	.001	.28	.001	.35
MDIR	.080	20.72**	.160	43.81**	.108	26.55**	.109	26.80**	.096	23.31**
ATI										
Ai/MDIR	.011	2.78	.010	2.85	.001	.131	.001	.36	.000	.01
R	.455		.499		.410		.408		.399	
R^2	.207		.249		.168		.166		.159	

*p is less than .05; **p is less than .01; Ai=Achievement via Indpendence; MDIR=Mean Directiveness; Ai/MDIR=Interaction between Ai and MDIR; TRF_4=Instructor-Individual Interaction; TRF_5=Dynamism-Enthusiasm; SAT_0=Overall Satisfaction; SAT_1=Satisfaction with Instructor; SAT_2=Satisfaction with Course.

for 2% and 10.7% of the variance in overall teacher ratings. The interaction term, Ai/MDIR, accounted for 1.2% of the variance but this amount was not found to be significant.

With ratings on the analytic-synthetic subscale (TRF_1) as the dependent measure, the variance in ratings accounted for by the regression equation was 10.1%. The set of main effect variables accounted for 7.1% **of the variance with Ai and MDIR respectively accounting for .8% and 6.3%** of the variance. The interaction term, Ai/MDIR did not account for any significant increase in variance.

When ratings on the organization-clarity subscale (TRF_2) were employed as the dependent measure, the regression equation accounted for 6.2% of the variance in ratings. The set of main effect variables accounted for 2.9%* of the variance in ratings on the organization-clarity subscale. Ai and MDIR respectively accounted for .2% and 2.6%** of the variance in ratings. The interaction variable, Ac/MDIR, accounted for 1.6% of the variance in ratings on the organization-clarity subscale but this amount was found to be nonsignificant.

The regression equation accounted for 19.7% of the variance in ratings when ratings on the interaction-group subscale (TRF_3) were employed as the dependent measure. The set of main effect variables accounted for 11.9%** of the variance in ratings with Ai and MDIR respectively accounting for .2% and 11.8%** of the variance. The interaction variable, Ai/MDIR did not account for any significant increase in variance in ratings on the instructor-group interaction subscale.

With ratings on the instructor-individual subscale (TRF_4) as the dependent measure, the regression equation accounted for 20.7% of the

variance in ratings. The set of main effects variables accounted for 8.1%** of the variance. Ai and MDIR respectively accounted for .10% and 8.0%** of the variance. The interaction variable Ai/MDIR accounted for 1.1% of the variance in ratings on the instructor-individual interaction subscale but this amount was nonsignificant.

The regression equation with ratings on the dynamism-enthusiasm subscale (TRF_5) as the dependent measure accounted for 24.9% of the variance in ratings. The set of main effect variables accounted for 16.0%** of the variance in ratings. Ai did not account for any variance while MDIR accounted for 16.0%**. The interaction variable Ai/MDIR accounted for 1.0% of the variance but this amount was not found to be significant.

With overall satisfaction ratings (SAT_0) as the dependent measure, the regression equation accounted for 16.8% of the variance in ratings. The set of main effect variables accounted for 10.9%** of the variance with Ai and MDIR respectively accounting for .10% and 10.8% of the variance. The interaction term, Ai/MDIR, did not account for any significant increase in variance in overall satisfaction ratings.

The regression equation, with ratings on the satisfaction with instructor subscale (SAT_1) as the dependent measure, accounted for 16.6%** of the variance in ratings. The set of main effect variables accounted for 11.0%** of the variance. Ai accounted for only .10% of the variance while MDIR accounted for 10.9%** of the variance. The interaction variable, Ai/MDIR, did not account for any significant increase in variance.

With ratings on the satisfaction with course subscale (SAT_2) as the dependent measure, the regression equation accounted for 15.9% of the variance in ratings. The set of main effect variables accounted for

.7%** of the variance in ratings with the increments attributable to Ai and MDIR respectively being .10% and 9.6%**. The interaction variable did not account for any increase in variance in satisfaction with course ratings.

Discussion. The primary aim of the present analysis was to determine whether significant ATI's were present between mean directiveness and achievement via independence. No evidence of significant ATI was found on any of the ten achievement measures employed since the interaction variable, Ai/MDIR, did not account for any significant amount of variance in any of the ten dependent measures.

Secondary findings with respect to Ai were also quite disappointing. Ai (with the effects of covariates and MDIR controlled) did not account for any significant variance in any of the ten dependent measures. Ai did not serve as a successful predictor of achievement. These findings are contrary to the intent of the Ai scale to predict achievement. Although within the previous correlational analysis Ai was significantly related to achievement, this was not the case in the multiple regression analysis. Mean directiveness accounted for a significant amount of variance in all of the dependent measures except for grades. All correlations were positive: more nondirective instructors received higher ratings on the TRF and satisfaction scales.

Mean directivenss and AcAi

Results. The AcAi variable was defined to approximate the aptitude combinations used in the Donimo (1971) study and was found by subtracting Ai from Ac. The AcAi variable is a measure of achievement orientation where high scores represent subjects high in Ac and low in Ai and low

TABLE 7

Results of Multiple Regression Analysis (Mean Directiveness/AcAi)

Full Model	GRADES Sr^2	GRADES F	TRF_0 Sr^2	TRF_0 F	TRF_1 Sr^2	TRF_1 F	TRF_2 Sr^2	TRF_2 F	TRF_3 Sr^2	TRF_3 F
Covariates	.088	4.96**	.056	3.55**	.022	1.27	.018	1.00	.071	4.57**
Age	.036	8.20**	.021	5.37*	.014	----	.014	----	.013	3.32
Sex	.032	7.15**	.005	1.28	.003	----	.001	----	.006	1.54
Year	.018	4.18*	.002	.50	.001	----	.000	----	.002	.44
Leader Sex	.001	.33	.028	7.06**	.003	----	.003	----	.050	12.98**
Main Effects	.007	.76	.122	15.37**	.095	11.25**	.044	4.83**	.130	15.59**
AcAi	.006	----	.015	3.69	.032	7.59**	.017	3.86*	.013	3.34
MDIR	.001	----	.017	27.05**	.063	14.92**	.026	5.80*	.118	30.42**
ATI										
ACAi/MDIR	.000	.06	.012	3.02	.014	3.34	.015	3.38	.004	.96
R	.308		.435		.362		.277		.453	
R^2	.095		.190		.131		.077		.205	

*P is less than .05; **p if less than .01; AcAi=Ac minus Ai; MDIR=Mean Directiveness; AcAi/MDIR=Interaction between AcAi and MDIR; TRF_0=Overall Treacher Rating Form; TRF_1=Analytic-Synthetic; TRF_2=Organization-Clarity; TRF_3=Instructor-Group.

TABLE 7 (cont'd)
Results of Miltiple Regression Anaylsis (Mean Directiveness/AcAi)

Full Model	TRF_4 Sr^2	TRF_4 F	TRF_5 Sr^2	TRF_5 F	SAT_0 Sr^2	SAT_0 F	SAT_1 Sr^2	SAT_1 F	SAT_2 Sr^2	SAT_2 F
Covariates	.115	7.47**	.078	5.38**	.059	3.74**	.055	3.44**	.062	3.92**
Age	.036	9.30**	.013	1.83	.008	2.12	.003	.73	.013	3.21
Sex	.006	1.53	.007	.99	.010	2.42	.002	.59	.019	4.74*
Year	.012	3.12	.006	.85	.005	1.26	.008	2.04	.003	.87
Leader Sex	.061	15.94**	.052	7.09**	.036	9.15**	.041	10.40**	.027	6.88**
Main Effects	.087	11.31**	.162	22.30**	.136	17.26**	.133	16.84**	.124	15.69**
AcAi	.007	1.82	.002	.29	.028	7.11**	.024	6.15*	.029	7.28**
MDIR	.080	20.80**	.160	22.00**	.108	27.41**	.109	27.52**	.096	24.09**
ATI										
AcAi/MDIR	.007	1.91	.012	1.61	.000	.00	.000	.01	.000	.02
R	.458		.503		.441		.434		.432	
R^2	.210		.253		.194		.188		.187	

*P is less than .05; **p is less than .01; AcAi=Ac minus Ai; MDIR=Mean Directiveness; AcAi/MDIR=Interaction between AcAi and MDIR; TRF_4=Instructor-Individual Interaction; TRF_5=Dynamism-Enthusiasm; SAT_0=Overall Satisfaction; SAT_1=Satisfaction with Instructor; SAT_2=Satisfaction with Course.

scores represent subjects low in Ac and high in Ai. The results of the multiple regression analysis with mean directiveness as the treatment variable and AcAi as the student aptitude are presented in TABLE 7.

The regression equation, with grades as the dependent variable, accounted for 9.5% of the variance in grades. The set of main effect variables did not account for a significant amount of variance in grades and as a result, the effects of the individual variables, AcAi and MDIR were not investigated. The interaction variable, AcAi/MDIR, did not account for any significant increase in variance in grades.

With overall teacher ratings as the dependent measure, the regression equation accounted for 19.0% of the variance in ratings. The amount of variance accounted for by the set of main effects variables was 12.2%**. AcAi and MDIR respectively accounted for 1.5% and 10.7%** of the variance in overall teacher ratings. The interaction variable, AcAi/MDIR, accounted for 1.2% of the variance but this amount was not significant.

When ratings on the analytic-synthetic subscale (TRF_1) were employed as the dependent variable, the regression equation accounted for 13.1% of the variance in ratings. The set of main effect variables accounted for 9.5%** of the variance in ratings with AcAi and MDIR respectively accounting for 3.2%** and 6.3%**. The interaction variable, AcAi/MDIR, did not account for any significant increase in variance.

The regression equation accounted for 7.7% of the variance in ratings when ratings on the organization-clarity subscale (TRF_2) were employed as the dependent measure. The set of main effect variables accounted for 4.4%** of the variance in ratings on the organization-clarity subscale. Both AcAi and MDIR accounted for significant amounts of variance which were respectively 1.7%** and 2.6%**. The interaction variable, AcAi/MDIR,

accounted for 1.5% of the variance, but this amount was not found to be significant.

The regression equation, with ratings on the instructor-group interaction subscale (TRF_3) as the dependent measure, accounted for 20.5% of the variance in ratings. The set of main effect variables accounted for 13.0%** of the variance in ratings with AcAi and MDIR respectively accounting for 1.3% and 11.8%**. The interaction variable, AcAi/MDIR, did not account for any significant increase in variance.

With ratings on the instructor-individual subscale (TRF_4) as the dependent measure, the regression equation accounted for 21.9% of the variance in ratings. The set of main effect variables accounted for 8.7%** of the variance. AcAi and MDIR respectively accounted for .7% and 8.0%** of the variance. The interaction variable, AcAi/MDIR, did not account for any significant increase in variance.

When ratings on the dynamism-enthusiasm subscale (TRF_5) were employed as the dependent measure, the regression equation accounted for 25.3% of the variance in ratings. The set of main effect variables accounted for 16.2%** of the variance with AcAi and MDIR respectively accounting for .2% and 15.0%**. The interaction variable, AcAi/MDIR, accounted for 1.2% of the variance in ratings on the dynamism-enthusiasm subscale but this amount was not found to be significant.

With overall satisfaction ratings (SAT_0) as the dependent measure, the regression equation accounted for 19.4% of the variance in ratings. The set of main effect variables accounted for 13.6%** of the variance. AcAi and MDIR respectively accounted for 2.8%** and 10.8%** of the variance in ratings. The interaction variable, AcAi/MDIR, did not account for any significant increase in variance.

The regression equation, with ratings on the satisfaction with instructor subscale (SAT_1) as the dependent measure, accounted for 18.8% of the variance in ratings. The set of main effect variables accounted for 12.3%** of the variance with AcAi and MDIR respectively accounting for 2.4%* and 10.9%**. The interaction variable, AcAi/MDIR, did not account for any significant increase in variance in ratings on the satisfaction with instructor subscale.

When ratings on the satisfaction with course subscale (SAT_2) were employed as the dependent measure, the regression equation accounted for 18.7% of the variance in ratings. The set of main effect variables accounted for 12.4%** of the variance in ratings with the increments attributable to AcAi and MDIR being 2.9%** and 9.6%**. The interaction variable did not account for any significant increase in variance in satisfaction with course ratings.

Discussion. The primary aim of the present analyses was to determine whether significant ATI's were present between mean directiveness and AcAi. No evidence of significant ATI was found on any of the ten dependent measures employed since the interaction variable, AcAi/MDIR, did not account for any significant amount of variance in any of the ten dependent measures. The AcAi varaible was constructed to approximate the aptitude groupings used in the Domino study (1971). Since no significant interactive relationships were present between MDIR and AcAi, the present investigation did not support any of the findings present in the Domino (1971) study. The current investigation, as well as those of Petersen (1976) and Porteus (1976) did not employ an extreme groups design (with respect to the Ac and Ai variables) as was the case with Domino's (1971) study. Since both the Petersen (1976) and Porteus studies found

only minimal support for Domino's findings, and the present investigation found no support, it would appear that Domino's findings may only be applicable to extreme scoring subjects on the Ac and Ai scales.

With the effects of the covariate variables and mean directiveness controlled, the AcAi variable accounted for significant amounts of variance in ratings on the analytic-synthetic subscale (TRF_1), the organization-clarity subscale (TRF_2), the overall satisfaction scale (SAT_0), the satisfaction with instructor subscale (SAT_1), and the satisfaction with course subscale (SAT_2). All of the previous correlations were positive: students high in Ac and low in Ai rated their instructors more favorable on the above mentioned dependent measures. Mean directiveness accounted for significant amounts of variance in all dependent measures except for grades. All correlations were positive: more nondirective instructors received higher ratings on the nine dependent measures.

Perceived directiveness and Achievement via Conformance (Ac)

Results. The results of the multiple regression analysis with perceived directiveness as the treatment variable and Ac as the student aptitude are presented in TABLE 8. With grades as the dependent variable, the regression equation accounted for 13.1% of the variance. The F-test values for both sets of variables (covariates and main effects) were both significant, and as a result, the significance of each independent variable within the equation was tested. The set of covariate variables accounted for 8.8%** of the variance in grades. Age, sex and year in college respectively accounted for 3.6%**, 3.2%**, and 1.8%* of this variance. The variance accounted for by the set of main effect variables was 4.2%**. Ac and PDIR respectively accounted for 3.4%** and .9% of

TABLE 8

Results of Multiple Regression Analysis (Perceived Directiveness/Ac)

Full Model	GRADES Sr^2	GRADES F	TRF_0 Sr^2	TRF_0 F	TRF_1 Sr^2	TRF_1 F	TRF_2 Sr^2	TRF_2 F	TRF_3 Sr^2	TRF_3 F
Covariates	.088	5.17**	.056	4.99**	.022	1.50	.018	1.18	.071	6.67**
Age	.036	8.54**	.021	7.54**	.014	----	.014	----	.013	4.85*
Sex	.032	7.45**	.005	1.79	.003	----	.003	----	.006	2.25
Year	.018	4.35*	.002	.71	.002	----	.000	----	.002	.64
Leader Sex	.002	.34	.028	9.92**	.003	----	.003	----	.050	18.95**
Main Effects	.042	5.01**	.366	64.95**	.239	33.20**	.204	26.82**	.384	72.40**
Ac	.034	7.90**	.002	.67	.007	1.89	.004	1.16	.002	.59
PDIR	.009	2.12	.364	129.23**	.232	64.51**	.199	52.48**	.383	144.21**
ATI										
Ac/PDIR	.001	.18	.001	.36	.003	.91	.000	.11	.001	.31
R	.362		.650		.513		.471		.675	
R^2	.131		.423		.263		.222		.456	

*p is less than .05; **p is less than .01; Ac=Achievement via Conformance; PDIR=Perceived Directiveness; Ac/PDIR=Interaction between Ac and PDIR; TRF_0=Overall Teacher Rating Form; TRF_1=Analytic-Synthetic; TRF_2=Organization-Clarity; TRF_3=Instructor-Group Interaction.

TABLE 8 (cont'd)

Results of Miltiple Regression Analysis (Perceived Directiveness/Ac)

Full Model	Sr^2 TRF_4	F	Sr^2 TRF_5	F	Sr^2 SAT_0	F	Sr^2 SAT_1	F	Sr^2 SAT_2	F
Covariates	.115	10.82**	.078	6.62**	.059	22.42**	.055	5.02**	.062	5.12**
Age	.036	13.46**	.013	4.51*	.008	2.99	.003	1.06	.013	4.19*
Sex	.006	2.22	.007	2.45	.010	3.41	.002	.86	.019	6.17*
Year	.012	4.52*	.006	2.08	.005	1.61	.008	2.98	.003	1.13
Leader Sex	.061	23.07**	.052	17.43**	.036	12.89**	.041	15.17**	.027	8.97**
Main Effects	.339	63.57**	.313	52.81**	.369	66.17**	.387	71.18**	.314	51.63**
Ac	.000	.12	.001	.34	.014	4.11*	.009	3.37	.013	4.26*
PDIR	.338	127.03**	.313	105.60**	.357	128.24**	.377	138.99**	.301	98.99**
ATI										
Ac/PDIR	.000	.02	.000	.02	.001	.30	.003	.90	.000	.01
R	.674		.626		.655		.666		.614	
R^2	.454		.392		.429		.443		.376	

*p is less than .05; **p is less than .01; Ac=Achievement via Conformance; PDIR=Perceived Directiveness; Ac/PDIR=Interaction between Ac and PDIR; TRF_4=Instructor-Individual Interaction; TRF_5=Dynamism-Enthusiasm; SAT_0=Overall Satisfaction; SAT_1=Satisfaction with Instructor; SAT_2=Satisfaction with Course.

the variance in grades. The interaction term, Ac/PDIR, did not account for any significant amount of variance in grades.

With overall teacher ratings (TRF_0) as the dependent measure, the variance accounted for by the regression equation was 42.3%. The F-test values for both sets of variables were significant and as a result, the increment attributable to each independent variable within the equation was tested for significance. The set of covariate variables accounted for 5.6%** of the variance in overall teacher ratings. Both leader sex and age were significant and respectively accounted for 2.8%** and 2.1%** of the variance. Sex and year in college did not account for significant amounts of variance in overall teacher ratings. The set of main effect variables accounted for 36.6% of the variance in overall teacher ratings. PDIR and Ac respectively accounted for 36.4%** and .2% of the variance. The interaction variable, Ac/PDIR, did not account for any significant amount of variance in overall teacher ratings.

The regression equation, with ratings on the analytic-synthetic subscale (TRF_1) as the dependent measure, accounted for 26.3% of the variance in ratings. The F-test value for the set of covariate variables was insignificant and as a result, the contribution of individual variables within the set was not explored further. The set of main effect variables accounted for 23.9% of the variance in ratings on the analytic-synthetic subscale. PDIR and Ac respectively accounted for 23.2%** and .7% of the variance. The interaction term Ac/PDIR, did not account for any significant increase in variance in ratings on the analytic-synthetic subscale.

When ratings on the organization-clarity subscale (TRF_2) were employed as the dependent measure, the variance accounted for by the regression equation was 22.2%. The F-test value for the set of covariate

variables was insignificant and consequently the contribution of individual variables within the set was not tested. The set of main effect variables accounted for 20.4%** of the variance in ratings. PDIR and Ac respectively accounted for 19.9%** and .4% of this variance. The interaction variable, Ac/PDIR, did not account for any significant increase in ratings on the organization-clarity subscale.

The variance accounted for by the regression equation, with ratings on the instructor-group interaction subscale (TRF_3) as the dependent measure, was 20.5%. The set of covariate variables accounted for 7.1%** of the variance in ratings. Leader sex accounted for 5.0%** of the variable that accounted for a significant amount of variance. The set of main effect varaibles accounted for 13.0% of the variance in ratings on the instructor-group interaction subscale. PDIR and Ac respectively accounted for 11.8% and 1.3% of the variance. The interaction term, Ac/PDIR, did not account for any significant increase in variance.

When ratings on the instructor-group interaction subscale (TRF_3) were employed as the dependent measure, the variance accounted for by the regression equation was 45.6%. The amounts of variance accounted for by the sets of covariate and main effect variables were both significant and were respectively 7.1%** and 38.4%**. Within the set of covariate variables, the 5.0%** increment in variance attributable to leader sex and the 1.3%* attributable to age were significant. Within the set of main effect variables only the 38.3%** increment in variance attributable to perceived directiveness was significant. The interaction term, Ac/PDIR, did not account for any significant increase in variance in ratings on the instructor-group interaction subscale.

With ratings on the instructor-individual subscale (TRF_4) as the dependent measure, the variance accounted for by the combined effect of all variables was 45.4%. The amounts of variance accounted for by the sets of covariate and main effect variables were both significant and were respectively 11.5%** and 33.9%**. Within the set of covariate variables, leader sex, age, and year in college respectively accounted for 6.1%**, 3.6%** and 1.2%* of the variance in ratings. Within the set of main effect variables the increment attributable to perceived directiveness was 33.8%**. The interaction term, Ac/PDIR, did not account for any significant increase in variance.

The variance accounted for by the combined effect of all variables, with ratings on the dynamism-enthusiasm subscale (TRF_5) as the dependent measure, was 39.2%. The significant amount of variance accounted for by the sets of covariate and main effect variables were respectively 7.8%** and 31.3%**. Within the set of covariate variables, only the 5.2%** increment attributable to leader sex was significant. Within the set of main effect variables only the 31.3%** increment attributable to perceived directiveness was significant. The interaction term, Ac/PDIR, did not account for any significant increase in variance.

When overall satisfaction ratings (SAT_0) were employed as the dependent measure, the variance accounted for by the combined effect of all variables was 42.9%. The significant amount of variance accounted for by the sets of covariate and main effect variables were respectively 5.9%** and 36.9%**. Within the set of covariate variables, leader sex accounted for a significant 3.6%** of the variance. Within the set of main effect variables, both perceived directiveness and Ac accounted for significant in-

crements in variance with the former accounting for 35.7% and the latter accounting for 1.4%. The interaction term, Ac/PDIR did not account for any significant increase in variance.

With ratings on the satisfaction with instructor subscale (SAT_1) as the dependent measure, the variance accounted for by the combined effect of all variables was 44.3%. The significant amount of variance accounted for by the sets of covariate and main effect variables were respectively 5.5%** and 38.7%**. Leader sex accounted for 4.1%** of the variance. Ac and perceived directiveness respectively accounted for .9% and 37.7%**. The interaction term Ac/PDIR, did not account for any significant increase in variance.

The variance accounted for by the regression equation, with ratings on the satisfaction with course subscale (SAT_2) as the dependent measure, was 37.6%. The significant amounts of variance accounted for by the covariate and main effect variables were respectively 6.2%** and 31.4%**. Within the covariate set of variables, sex leader sex, and age were significant with respective increments of 1.9%*, 2.7%** and 1.8%*. Within the main effect set of variables, both Ac and perceived directiveness were significant with respective increments of 2.7%** and 30.1%**. The interaction term, Ac/PDIR, did not account for any significant increase in variance.

Discussion. The primary aim of the present analysis was to determine whether significant ATI's were present between perceived directiveness and achievement via conformance. No evidence to support the existence of significant ATI's was found since the interaction term, Ac/PDIR, did not account for any significant amounts of variance in any

of the ten dependent measures employed. As a result, further analysis was not undertaken.

Ac accounted for a significant amount of variance in grades when the effects of the covariate variables were controlled. Ac also accounted for significant amounts of variance in overall satisfaction (SAT_0) and satisfaction with the course (SAT_2) when the effects of the covariate variables and mean directiveness were controlled. In both instances the correlations were positive: students scoring higher on the Ac scale obtained higher grades and were more satisfied overall and more satisfied with the course. These results are consistent with the intent of the Ac aptitude to predict achievement but contrary with respect to the prediction of satisfaction, since one would not expect students high in Ac to be more satisfied with instruction that was generally nondirective in nature.

Perceived directiveness (with the effects of the covariate variables controlled) accounted for significant amounts of variance in all dependent measures except grades. All correlations were positive: instructors who were perceived to be more nondirective were rated higher on all scales of the teacher rating form and on all satisfaction measures. The results for perceived directiveness are quite similar to those of mean directiveness but perceived directiveness accounted for greater amounts of variance in the teacher rating scales and satisfaction measures. As was the case with mean directiveness, perceived directiveness did not account for a significant amount of variance in grades.

Several of the variables entered as covariates in the regression equations accounted for significant amounts of variance in dependent

variables. Leader sex was the best predictor of overall teacher ratings (TRF_0), instructor-group interaction ratings (TRF_3), instructor-individual interaction ratings (TRF_4), dynamism and enthusiasm rating (TRF_5), overall satisfaction (SAT_0), satisfaction with instructor (SAT_1), and satisfaction with course (SAT_2). All correlations were positive: male instructors were rated more favorable on these outcome measures. Age (with the effects of leader sex controlled) accounted for singificant amounts of variance in grades, overall teacher ratings (TRF_0), instructor-group interaction ratings (TRF_3), instructor-individual interaction ratings (TRF_4), dynamism-enthusiasm ratings (TRF_5) and satisfaction with course (SAT_2). In the latter dependent measure (SAT_2), the effect of sex was also controlled. All correlations were positive: older students obtained higher grades and rated instructors higher on the previously listed teacher rating scales and satisfaction measures. Sex accounted for significant amounts of unique variance in grades and satisfaction with course (SAT_2). In the former, the effects of leader sex and age were controlled while in the latter only the effect of leader sex was controlled. With the student sex variable, the correlations were negative: female students obtained higher grades and were more satisfied with the course. Year in college (with the effects of age and sex controlled) accounted for significant amounts of unique variance in grades and instructor-individual interaction ratings. The correlations were positive: students in a more advanced year in college obtained higher grades.

Perceived directiveness and Achievement via Independence (Ai)

Results. The results of the multiple regression analysis with perceived directiveness as the treatment variable and Ai as the student ap-

TABLE 9

Results of Multiple Regression Analysis (Perceived Directiveness/Ai)

Full Model	GRADES Sr^2	GRADES F	TRF_0 Sr^2	TRF_0 F	TRF_1 Sr^2	TRF_1 F	TRF_2 Sr^2	TRF_2 F	TRF_3 Sr^2	TRF_3 F
Covariates	.087	5.05**	.056	4.98**	.022	1.50	.018	1.18	.071	6.66**
Age	.036	8.35**	.021	7.53**	.014	----	.014	----	.013	4.83*
Sex	.032	7.28**	.005	1.79	.003	----	.001	----	.006	2.24
Year	.018	4.25*	.002	.71	.001	----	.000	----	.002	.64
Leader Sex	.001	.33	.028	9.91**	.003	----	.003	----	.050	18.91**
Main Effects	.022	2.55	.365	64.71**	.238	33.16**	.200	26.39**	.383	72.05**
Ai	.010	----	.001	.34	.006	1.61	.001	.33	.001	.23
PDIR	.012	----	.364	129.09**	.232	64.71**	.199	52.46**	.383	143.87**
ATI										
Ai/PDIR	.001	.27	.001	.47	.007	1.82	.003	.86	.000	.18
R	.333		.650		.515		.471		.674	
R^2	.111		.422		.266		.222		.454	

*p is less than .05; **p is less than .01; Ai=Achievement via Independence; PDIR=Perceived Directiveness; Ai/PDIR=Interaction between Ai and PDIR; TRF_0=Overall Teacher Rating Form; TRF_1=Analytic-Synthetic; TRF_2=Organization-Clarity; TRF_3=Instructor-Group Interaction.

TABLE 9 (cont'd)

Results of Multiple Regression Analysis (Perceived Directiveness/Ai)

Full Model	Sr^2	TRF_4 F	Sr^2	TRF_5 F	Sr^2	SAT_0 F	Sr^2	SAT_1 F	Sr^2	SAT_2 F
Covariates	.115	10.81**	.078	6.61**	.059	5.18**	.055	4.94**	.062	5.03**
Age	.036	13.45**	.013	4.50*	.008	2.94	.003	6.05	.013	4.12*
Sex	.006	2.22	.007	2.44	.010	3.35	.002	.85	.019	6.07*
Year	.012	45.15**	.006	2.08	.005	1.75	.008	2.93	.003	1.11
Leader Sex	.061	23.06**	.052	17.41**	.036	12.68**	.041	14.94**	.027	8.82**
Main Effects	.339	63.53**	.313	52.72**	.358	63.15**	.378	32.27**	.302	48.75**
Ai	.000	.06	.000	.00	.001	.19	.000	.13	.001	.22
PDIR	.338	126.99**	.313	105.43**	.357	126.11	.377	136.86**	.301	97.28
ATI										
Ai/PDIR	.000	.03	.000	.01	.002	.73	.003	.93	.001	.44
R	.674		.626		.647		.659		.605	
R^2	.454		.391		.419		.435		.365	

*p is less than .05; **p is less than .01; Ai=Achievement via Independence; PDIR=Perceived Directiveness; Ai/PDIR=Interaction between Ai and PDIR; TRF_4=Instructor-Individual Interaction; TRF_5=Dynamism-Enthusiasm; SAT_0=Overall Satisfaction; SAT_1=Satisfaction with Instructor; SAT_2=Satisfaction with Course.

titude are presented in TABLE 9. With grades as the dependent measure the regression equation accounted for 11.1% of the variance in grades. The set of main effect variables accounted for only 2.2% of the variance in grades, an amount which did not even approach significance. As a result, the indivicual effects of Ai and perceived directiveness were not investigated. The interaction variable, Ac/PDIR, did not account for any significant increase in variance.

The regression equation, with overall teacher ratings (TRF_0) as the dependent measure, accounted for 42.2% of the variance in ratings. The amount accounted for by the set of main effect variables was 36.5%**. The two variables within the set, Ai and PDIR, respectively accounted for .1% and 36.4%** of the variance in overall teacher ratings. The interaction term, Ai/PDIR, did not account for any significant increase in variance.

When ratings on the analytic-synthetic subscale (TRF_1) were employed as the dependent measure, the variance in ratings accounted for by the regression equation was 26.6%. The set of main effect variables accounted for 23.8%** of the variance with Ai and PDIR respectively accounting for .6% and 23.2%** of the variance. The interaction term, Ai/PDIR did not account for any significant increase in variance.

With ratings on the organization-clarity subscale (TRF_2) as the dependent measure, the regression equation accounted for 22.2% of the variance in ratings. The set of main effect variables accounted for 20.0%** of the variance in ratings on the organization-clarity subscale. Ai and PDIR respectively accounted for .1% and 19.9%** of the variance in ratings. The interaction variable, Ac/PDIR, did not account for a significant

amount of variance in ratings on the organization-clarity subscale.

With ratings on the interaction-group subscale (TRF_3) as the dependent measure, the regression equation accounted for 45.4% of the variance in ratings. The set of main effect variables accounted for 38.3% of the variance in ratings with Ai and MDIR respectively accounting for .1% and 38.3%** of the variance. The interaction variable, Ai/PDIR did not account for any significant increase in variance in ratings on the instructor-group interaction subscale.

The regression equation, with ratings on the instructor-individual subscale (TRF_4) as the dependent measure, accounted for 45.4% of the variance in ratings. The set of main effects variables accounted for 33.9%** of the variance. Ai did not account for any significant amount of variance while PDIR accounted for the entire amount. The interaction variable Ai/PDIR did not account for any significant amount of variance in ratings on the instructor-individual interaction subscale.

When ratings on the dynamism-enthusiasm subscale (TRF_5) were employed as the dependent measure, the regression equation accounted for 39.1% of the variance in ratings. The set of main effect variables accounted for 31.3%** of the variance in ratings. Ai did not account for any variance while PDIR accounted for 31.3%**. The interaction variable Ai/PDIR did not account for any significant amount of variance in ratings on the dynamism-enthusiasm subscale.

With overall satisfaction ratings (SAT_0) as the dependent measure, the regression equation accounted for 41.9% of the variance in ratings. The set of main effect variables accounted for 35.8%** of the variance with Ai and PDIR respectively accounting for .1% and 35.8% of the vari-

ance. The interaction term, Ai/PDIR, did not account for any significant increase in variance in overall satisfaction ratings.

With ratings on the satisfaction with instructor subscale (SAT_1) as the dependent measure, the regression equation accounted for 43.5%** of the variance in ratings. The set of main effect variables accounted for 37.8%** of the variance. PDIR accounted for 37.7% of the variance while Ai did not account for any. The interaction variable, Ai/PDIR, did not account for any significant increase in variance.

The regression equation, with ratings on the satisfaction with course subscale (SAT_2) as dependent measure, accounted for 36.5% of the variance in ratings. The set of main effect variables accounted for 30.2% of the variance in ratings with the increments attributable to Ai and PDIR respectively being .1% and 30.1%. The interaction variable, Ai/PDIR, did not account for any significant increase in variance in ratings on the satisfaction with course subscale.

Discussion. The primary aim of the foregoing analysis was to determine whether significant interactive relationships were present between perceived directiveness and achievement via independence. The interaction variable, Ai/PDIR, did not account for any significant amount of variance in any of the ten dependent measures.

Examination of the contributions in variance made by the Ai variable revealed that with the effects of the covariates and MDIR controlled, Ai did not account for any significant variance in any of the ten dependent measures. Unlike the Ac variable, Ai did not even account for a significant amount of unique variance in grades. This is contrary to the intent of the Ai side to predict achievement. Perceived directiveness

accounted for a significant amount of variance in all of the dependent measures except for grades. All correlations were positive: more non-directive instructors received higher ratings on the TRF scales and satisfaction measures.

Perceived directiveness and AcAi

Results. The results of the multiple regression analysis with mean directiveness as the treatment variable and AcAi as the student aptitude are presented in TABLE 7. With grades as the dependent variable, the regression equation accounted for 10.9% of the variance in grades. The set of main effect variables did not account for a significant amount of variance in grades and as a result, the effects of the individual variables, AcAi and PDIR were not investigated. The interaction variable, AcAi/PDIR did not account for any significant increase in variance in grades.

With overall teacher ratings as the dependent measure, the regression equation accounted for 42.7% of the variance in ratings. The amount of variance accounted for by the set of main effect variables was 36.8%**. AcAi and PDIR respectively accounted for .4% and 36.4%** of the variance in overall teacher ratings. The interaction variable AcAi/PDIR accounted for .37% of the variance but this amount was not significant.

When ratings on the analytic-synthetic subscale (TRF_1) were employed as the dependent variable, the regression equation accounted for 28.4% of the variance in ratings. The set of main effect variables accounted for 24.9%** of the variance in ratings with AcAi and PDIR respectively accounting for 1.8%* and 23.2%**. The interaction variable, AcAi/PDIR, accounted for 1.3% of the variance in ratings on the analytic-synthetic subscales, but this amount was not significant.

TABLE 10

Results of Multiple Regression Analysis (Perceived Directiveness/AcAi)

Full Model	GRADES Sr^2	GRADES F	TRF_0 Sr^2	TRF_0 F	TRF_1 Sr^2	TRF_1 F	TRF_2 Sr^2	TRF_2 F	TRF_3 Sr^2	TRF_3 F
Covariates	.088	5.05**	.056	5.03**	.022	1.54	.018	1.19	.071	6.70**
Age	.036	8.33**	.021	7.6*	.014	----	.014	----	.013	4.87*
Sex	.032	7.27**	.005	1.81	.003	----	.001	----	.006	2.26
Year	.018	4.25*	.002	.71	.001	----	.000	----	.002	.65
Leader Sex	.001	.33	.028	9.99**	.003	----	.003	----	.05	19.03**
Main Effects	.016	1.88	.368	65.79**	.249	35.70**	.207	27.45**	.386	72.97**
AcAi	.004	----	.004	1.40	.018	5.06*	.007	1.95	.003	1.11
Perceived Directiveness	.012	----	.364	130.18**	.232	66.34**	.199	52.95**	.383	144.83**
ATI										
AcAi/PDIR	.005	1.26	.004	1.15	.013	3.62	.004	1.15	.002	.65
R	.330		.654		.533		.478		.677	
R^2	.109		.427		.284		.229		.458	

*p is less than .05; **p is less than .01; TRF_0=Overall Teacher Rating Form; TRF_1=Analytic-Synthetic: TRF_2=Organization-Clarity; TRF_3=Instructor-Group Interaction; AcAi=Ac minus Ai; AcAi/PDIR=Interaction between AcAi and Perceived Directiveness.

TABLE 10 (cont'd)

Results of Multiple Regression Analysis (Perceived Directiveness/AcAi)

Full Model	Sr^2	TRF_4 F	Sr^2	TRF_5 F	Sr^2	SAT_0 F	Sr^2	SAT_1 F	Sr^2	SAT_2 F
Covariates	.115	10.82**	.078	6.62**	.059	5.30**	.055	5.06**	.062	5.13**
Age	.036	13.47**	.013	4.51*	.008	3.01	.003	1.07	.013	4.20*
Sex	.006	2.22	.007	2.45	.010	3.43	.002	.87	.019	6.20*
Year	.012	4.52*	.006	2.08	.005	1.79	.008	3.00	.003	1.13
Leader Sex	.061	23.09**	.052	17.44**	.036	12.97**	.041	15.29**	.027	9.00**
Main Effects	.339	63.70**	.313	52.80**	.370	66.67**	.387	71.78**	.315	51.93**
AcAi	.001	.26	.000	.01	.012	4.35*	.009	3.48	.014	4.57*
Perceived Directiveness	.338	127.14**	.313	105.59**	.357	128.98**	.377	140.08**	.301	99.29**
ATI										
AcAi/PDIR	.000	.06	.001	.33	.004	1.27	.007	2.43	.001	.35
R	.674		.626		.657		.669		.615	
R^2	.454		.392		.432		.447		.378	

*p is less than .05; **p is less than .01; TRF_4=Instructor-Individual Interaction; TRF_5=Dynamism-Enthusiasm; SAT_0=Overall Satisfaction; SAT_1=Satisfaction with Instructor; SAT_2=Satisfaction with Course; AcAi=Ac minus Ai; AcAi/PDIR=Interaction between AcAi and Perceived Directiveness.

With ratings on the organization-clarity subscale (TRF_2) as the dependent measure, the regression equation accounted for 22.9% of the variance in ratings. The set of main effect variables accounted for 20.7%** of the variance in ratings on the organization-clarity subscale. Both AcAi and PDIR accounted for significant amounts of variance which were respectively .7%* and 19.9%**. The interaction variable, AcAi/PDIR, accounted for .4% of the variance but this amount was not found to be significant.

The regression equation, with ratings on the instructor-group interaction subscale (TRF_3) as the dependent measure, accounted for 45.8% of the variance in ratings. The set of main effect variables accounted for 38.6%** of the variance in ratings with AcAi and PDIR respectively accounting for 1.3% and 38.3%**. The interaction variable, AcAi/PDIR, did not account for any significant increase in variance.

When ratings on the instructor-individual subscale (TRF_4) were employed as the dependent measure, the regression equation accounted for 45.4% of the variance in ratings. The set of main effect variables accounted for 33.9%** of the variance. The interaction variable, AcAi/PDIR, did not account for any significant increase in variance.

The amount of variance accounted for by the regression equation when ratings on the dynamism-enthusiasm (TRF_5) subscale were employed as the dependent measure was 39.2%. The set of main effect variables accounted for 31.3%** of the variance. AcAi did not account for any variance while PDIR accounted for 31.3%**. The interaction variable, AcAi/PDIR, did not account for any significant amount of variance in ratings on the dynamism-enthusiasm subscale.

With overall satisfaction ratings (SAT_0) as the dependent measure, the regression equation accounted for 43.2% of the variance in ratings. The set of main effect variables accounted for 37.0%** of the variance. AcAi and PDIR respectively accounted for 1.2%* and 35.7%** of the variance in ratings. The interaction variable, AcAi/PDIR, did not account for any significant increase in variance.

The regression equation accounted for 44.7% of the variance in ratings when ratings on the satisfaction with instructor subscale (SAT_1) were employed as the dependent measure. The set of main effect variables accounted for 38.7%** of the variance with AcAi and PDIR respectively accounting for .9% and 37.7%**. The interaction variable, AcAi/PDIR, did not account for any significant increase in variance in ratings on the satisfaction with instructor subscale.

The regression equation, with ratings on the satisfaction with course subscale (SAT_2) as the dependent measure, accounted for 37.8% of the variance in ratings. The set of main effect variables accounted for 31.5%** of the variance in ratings with the increments attributable to AcAi and PDIR being 1.4% and 30.1%**. The interaction variable did not account for any significant increase in varaince in satisfaction with course ratings.

Discussion. The primary aim of the present analysis was to determine whether significant ATI's were present between perceived directiveness and AcAi. The AcAi variable was constructed to approximate the aptitude groupings used in the Domino study (1971) but no evidence of significant ATI's was found. The interaction variable AcAi/PDIR did not account for any significant amount of variance in any of the ten dependent measures and

as a result, the present investigation did not support any of the findings present in the Domino (1971) study. With perceived directiveness as the treatment variable, failure to replicate significant ATI's may partially have been due to the fact that Domino's results were obtained with extreme scoring subjects on the Ac and Ai scales. It was, however, the intent of the current investigation to determine whether Domino's findings would extend to less extreme scoring subjects on the Ac and Ai scales. This did not appear to be the case.

With the effects of the covariates and perceived directiveness controlled, the AcAi variable accounted for significant amounts of variance in ratings on the analytic-synthetic subscale (TRF_1), the overall satisfaction scale (SAT_0) and the satisfaction with course subscale. All three correlations were positive: students high on Ac and low on Ai rated their instructors higher on the three dependent measures. Perceived directiveness accounted for significant amounts of variance in all dependent measures except for grades. All correlations were positive: more nondirective instructors were rated higher on the nine dependent measures.

Overall Discussion and Summary

Of the 241 questionnaires collected, 28, or approximately 7% of the entire population, were ineligible for inclusion in the analysis because of missing data. The sample used in the current investigation represented approximately 53% of the entire population of students enrolled in the courses. The twelve instructors comprised the entire teaching staff for the seminar groups. Descriptive statistics for the entire population

were available for only one variable, grades. The sample mean for grades was 6.97 while the population mean was 6.53. Since the sample mean is less than half a grade point higher than the population mean it would appear that at least with respect to the grades variable, the current sample is representative of the population of students enrolled in the course. A review of the descriptive statistics for instructors who participated in the study, revealed that limited variability, as well as a general inclination towards nondirectiveness was present for instructional style. Although the instructional setting seemed to be such that either a directive or nondirective approach might be employed, instructional style, as assessed by the students, did not vary substantially among instructors. This restricted range in instructional style was not desirable, since it reduced the probability of obtaining significant ATI's. This restricted range is, however, a reflection of the actual style of instruction (given the assumption that the SPOTS scale is able to assess instruction along the directiveness continuum) that occurred within the present setting. Since the current investigation was planned as a naturalistic replication of previous findings, the restricted range of directiveness obtained suggests that in instructional environments similar to the one in the current study, the directiveness dimension may not be well polarized. This finding also reflects the troublesome issue of the generalizability of results obtained from studies in which polar opposites of an apparently continuous variable, such as directiveness, are dichotomized. The extremes of the variables may not be well represented within the general population and, as a result, findings derived from such studies may not readily generalize to less extreme values of the variable. The current investigation was

planned as a naturalistic replication of Domino's (1971) findings and as a result, directiveness was used as a continuous variable. Although failure to replicate the Domino findings may partially be a consequence of the restricted range of directiveness present within the current sample of instructors, it must be kept in mind that the occurrence of a limited range of directiveness suggests that within a natural setting, directiveness may not manifest the extremes present in the Domino (1971) investigation.

Multiple regression analysis identified more clearly the relationships present between the variables considered as covariates and the ten dependent measures employed. The set of covariate variables accounted for a significant amount of variance in 48 of the 60 regression equations that were constructed. The set of covariate variables did not account for significant amounts of variance in only two of the dependent measures, ratings on the analytic-synthetic subscale (TRF_1) and ratings on the organization-clarity subscale (TRF_2). With grades as the dependent measure, age was the most successful predictor variable for the set of covariate variables. Older students obtained higher grades. For the other nine dependent measures, leader sex was the most succussful predictor variable for the set of covariate variables. Male instructors were rated more favorably. Sex and year in college also accounted for significant amounts of variance in grades. Females and students in more advanced years in college obtained higher grades. Age also accounted for significant amounts of variance in overall teacher ratings in all six regression equations. Older students rated their instructors more favorably on the overall teacher rating scale. Sex accounted for sig-

nificant amounts of variance in satisfaction with course ratings in all six regression equations. Females were more satisfied with the course.

The correlational analysis yielded a correlation of .31 between Ac and Ai. This correlation is in keeping with the correlations cited in the CPI manual (Gough, 1957) but is very different from the -.83 correlation obtained in the Domino study. Domino's experimental group represents extremes on the Ai and Ac scales; groups so extreme that in an attempted replication of the Domino findings, Goldberg (1970) could not find an adequate number of students to meet the group assignment criteria (refer to Chapter III). In the current investigation, the correlations between Ac and grades and Ai and grades were respectively .22** and .14*. These correlations are consistent with the intent of both scales to predict academic achievement and are consistent with Megargee's (1972) review of validity data for the two scales. In the Domino study, however, Ai and Ac respectively correlated .30 and -.30 with grades. In summary, the Ac and Ai aptitudes for the current sample are in keeping with most research findings, but are highly discrepant from the findings present in the Domino (1971) study. The Domino findings are reviewed as being one of the primary sources of validity for the differential predictive ability (prediction of achievement in conforming or independent settings) of the Ac and Ai scales (Magargee, 1972) but, in light of the fact that Domino's subjects are not very representative of the population, it would appear that this differential predictive ability is restricted to the extreme levels of Ai and Ac employed in the Domino study.

In the regression analyses with mean directiveness as the treatment variable, Ac (with the effects of the covariate variables controlled) ac-

counted for a significant amount of the variance in grades. This was in keeping with the intent of the scale to predict achievement but unexpected in light of the fact that instructional style was generally nondirective and that the specific intent of the scale is to predict achievement in situations where conformance is desirable (directive instruction). In addition, Ac (with the effects of the covariates and mean directiveness controlled) accounted for significant amounts of the variance in all three satisfaction measures. With perceived directiveness as the treatment variable, the results for Ac were quite similar but Ac did not account for a significant amount of the variance in satisfaction with course ratings. With either perceived or mean directiveness as the treatment variable Ai did not account for a significant amount of the variance in grades. This finding is contrary to the intent of the Ai scale to predict academic achievement in settings where independence is rewarded. In addition, Ai did not account for significant amounts of variance in any of the other nine dependent measures employed. The AcAi variable is a continuous variable that was constructed to approximate the aptitude combinations used in the Domino (1971) study. With mean directiveness as the treatment variable, AcAi was a significant predictor of ratings on the analytic-synthetic subscale (TRF_1), the organization-clarity subscale and ratings on all three satisfaction measures. With perceived directiveness as the treatment variable, AcAi, was a significant predictor of ratings on the analytic-synthetic subscale (TRF_1), overall satisfaction ratings (SAT_0) and satisfaction with course ratings (SAT_2). All correlations were positive: students high in AcAi (high in Ac and low Ai scores) rated instructors more favorably.

These findings are contrary to those of Domino (1971) since in order to replicate his findings the correlations between AcAi and the dependent measures should have been positive.

The treatment variables, MDIR and PDIR, were not significant predictors of grades. They were, however, significant predictors of the other nine dependent measures (with the effects of the covariates controlled). PDIR accounted for more significant amounts of variance in the dependent measures than MDIR. This finding was consistent with those of the McCann and Fisher study (1977) and suggests that perceived directiveness is somewhat independent of actual or mean directiveness. McCann and Fisher (1977) concluded that actual or mean directiveness is important only to the extent that it influences the way each student perceives the teacher but it must be kept in mind that, of the two measures, MDIR is the more pragmatic. Perceived directiveness is an organismic variable and, as a result, can not be manipulated. Its instructional usefulness is therefore limited. Perceived directiveness does, however, result in more accurate prediction of dependent measures for the individual student.

The interaction variables were constructed by multiplying a student aptitude variable (Ac, Ai, AcAi) by a treatment variable (MDIR, PDIR). This interaction variable was then entered into the regression equation immediately following the two independent variables. If the amount of variance accounted for by this variable is significant, there is a significant interaction between the two independent variables in their effect on the dependent measure. Of the six interaction variables constructed, none accounted for significant amounts of variance in the 60 regression

equations. As a result, no further analysis was undertaken.

The specific intent of the Ac and Ai scales, as outlined in the CPI manual (Gough, 1957), is differential prediction of achievement. That is, the Ac scale is supposed to predict achievement in instructional situations where conformance is desirable, while the Ac scale is supposed to predict achievement in instructional situations where independence is desirable. This intent was not supported in the current investigation since none of the interaction terms with Ai or Ac as the aptitude component accounted for significant amounts of variance in the dependent measures employed. The AcAi variable was constructed to approximate the aptitude combinations used in the Domino study (1971) but unlike in the Domino study, no significant interactive relationships were present between measures of directiveness and AcAi.

CHAPTER VI

Summary and Conclusions

Prior to the last decade, educational research had not been addressed to examining the interactive relationships that might be present between student characteristics and instructional methods. The research orientation that is addressed to this issue has been termed ATI research and was initially proposed by Cronbach in 1957. The ATI approach gained momentum slowly but in more recent years, several reviews (Bracht, 1970; Berliner & Cahen, 1973; Cronbach & Snow, 1977) of ATI research have appeared. Some interesting possibilities for the adaptation of instruction to individual differences have emerged from ATI research. The current study was planned as an extension and replication of one of the more convincing demonstrations of ATI reported in the literature. Domino (1971), using an extreme groups design, found significant interactions present between instructional style and achievement orientation. The current study attempted to determine whether the significant ATI effects present in the Domino (1971) study would generalize to a sample of college students who were not selected from the extremes of the Ac and Ai distributions.

The current study was naturalistic in design and employed multiple regression analysis to explore the relationships between independent and dependent variables. The independent variables were of three types: covariates, main effects, and interactions. The covariate variables were sex, age, leader sex, and year in college. The main effect variables were the treatment variables, MDIR and PDIR, and the student aptitude variables, Ac, Ai, and AcAi. The interaction variables were Ac/MDIR, Ai/MDIR, AcAi/MDIR, Ac/PDIR, Ai/PDIR, and AcAi/PDIR. The dependent variables were grades,

overall teacher ratings and ratings on five subscales of this measure, and overall satisfaction ratings and ratings on two subscales of this measure.

The primary aim of the multiple regression analysis was to determine the amount of variance accounted for by the interactions between student aptitudes and instructor directiveness. The analyses revealed that the interactions did not account for any significant amount of variance in any of the ten dependent measures. In the current sample, the Ac and Ai aptitudes did not possess the differential predictive ability claimed. The ATI findings from the Domino (1971) study did not generalize to the current sample of college students. A detailed review of the Domino (1971) study revealed that the correlations present between aptitudes and dependent measures were not in keeping with those cited in reviews of the Ac and Ai scales by Megargee (1972). The samples used in both Domino (1968, 1972) studies appear to be highly unrepresentative but paradoxically, the major support for the differential predictive ability of the Ac and Ai scales comes from the 1968 Domino study (Megargee, 1972). In light of this, and the fact that the studies conducted by Petersen (1976) and Porteus (1976) found only marginal support for the ATI effects found by Domino (1971), the current failure to replicate the Domino findings is not that unexpected. Although failure to replicate Domino's findings may partially have been a consequence of the limited range of directiveness present in the current sample of instructors, it seems more probable that Domino's findings were a consequence of the extreme groups design employed and that as a result, they did not generalize to the undifferentiated sample of college students used in the present investigation.

Secondary findings can be summarized as follows:

1) Several of the covariate variables accounted for significant amounts of variance in the dependent measures and if left uncontrolled may possibly have been a source of confounding variance.

2) Of the student aptitudes, Ac (with the effects of the covariates controlled) was the only aptitude which accounted for a significant amount of the variance in grades. Ac and AcAi (with the effects of directiveness and the covariates controlled) accounted for significant amounts of the variance in several affective dependent measures. Ai did not account for significant amounts of variance in any of the nine affective dependent measures.

3) Mean directiveness and perceived directiveness did not account for significant amounts of the variance in grades. They did, however, account for significant amounts of the variance in the affective dependent measures, with perceived directiveness accounting for substantially larger amounts than mean directiveness. All correlations were positive: more nondirective instructors were rated more favorably on the teacher rating and satisfaction scales. These findings were consistent with those of Tuckman (1968) and those of McCann and Fisher (1977) who also found that students preferred nondirective instructors.

In conclusion, the findings of the present study suggest that in conducting ATI research, the researcher must use the entire range of an aptitude variable if the findings are eventually to be of instructional relevance. Findings obtained from an extreme groups design study such as Domino's, may only be applicable to those specific levels of the aptitude used in the study and as a result, are not generalizable

to other samples of subjects. In spite of the present study's failure to replicate previous ATI findings, it is still the present author's contention that ATI research has much to offer both the fields of education and psychology. The Domino findings, in spite of their possible shortcomings, do suggest that the teaching-learning process is more complex than can be assessed using a "main effects" approach. More research is needed to explain the ATI's present in instructional settings. The choice of personality traits as aptitudes appears to be fruitful but researchers must be careful to choose aptitudes that are highly reliable and valid. In retrospect, the construct validity of the Ac and Ai aptitudes does not appear to be adequate. Future research involving these scales should take this into consideration. Another issue which would appear to warrant further investigation, is that of naturalistic versus experimental manipualtion of instructor directiveness. Domino (1971) employed extremes of the directiveness dimension as the instructional treatments in his study, while the current investigation utilized the actual level of directiveness present within a sample of instructors in a natural educational setting. Although one possible shortcoming of the present investigation may have been the limited range of directiveness present in the sample of instructors, it must be kept in mind, that instructors employing extremes in instructional style may not be that common in actual educational settings. Research involving only the extremes of the directiveness dimension may not readily generalize to less extreme eduacational settings. It is therefore the present author's contention that future research involving the directiveness dimension of teaching should attempt to use the entire range of instructional directiveness present in actual educational settings.

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Appendix A

Student Questionnaire Booklet

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Researcher: Vern Kebernik

This research project is designed to clarify certain aspects of college teaching. Hopefully, understanding will lead to improvements. Your cooperation in completing the following questionnaire is very much appreciated, and, indeed is essential to the success of the study.

Please read the following items:

1) No participation in the research project other than filling out the following questionnaire will be asked of you.

2) A full report on the findings of the study will be made available to you when the project has been completed.

3) Your responses to the items on the questionnaire are entirely anonymous. However, for research purposes it will be necessary for you to fill in the required information on the red and white removable label on the envelope. This information, excluding your identification, and other course statistics will then be entered on the outside of the envelope by an individual not associated with the course. The outside label will then be removed and destroyed, thus fully insuring that the information remains anonymous.

4) Please answer all questions on the questionnaire.

SECTION I

This section contains a series of statements. Read each one, decide how you feel about it, and then mark your answer. If you agree with a statement, or feel that it is true about you, answer TRUE. If you disagree with a statement, or feel that it is not true about you, answer FALSE. Be sure to answer either TRUE or FALSE for every statement, even if you have to guess at some.

	TRUE	FALSE
1) I looked up to my father as an ideal man.	___	___
2) Our thinking would be a lot better off if we would forget about words like "probably", "approximately" and "perhaps".	___	___
3) I have a strong desire to be a success in the world.	___	___
4) I liked "Alice in Wonderland" by Lewis Carroll.	___	___
5) I usually go to the movies more than once a week.	___	___
6) I have had very peculiar and strange experiences.	___	___
7) I am often said to be hot headed.	___	___
8) When I was going to school I played hooky quite often.	___	___
9) I have very few fears compared to my friends.	___	___
10) For most questions there is just one right answer, once a person is able to get all the facts.	___	___
11) I think I would like the work of a school teacher.	___	___
12) When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing.	___	___
13) I seem to be about as capable and smart as most others around me.	___	___
14) I usually take an active part in the entertainment at parties.	___	___
15) The trouble with many people is that they don't take things seriously enough.	___	___
16) It is always a good thing to be frank.	___	___
17) It is annoying to listen to a lecturer who cannot make up his mind as to what he really believes.	___	___

	TRUE	FALSE
18) I don't blame anyone for trying to grab all he can get in this world.	___	___
19) Planning one's activities in advance is very likely to take most of the fun out of life.	___	___
20) I was a slow learner in school.	___	___
21) I like poetry.	___	___
22) There is something wrong with a person who can't take orders without getting angry or resentful.	___	___
23) Sometimes without any reason or even when things are going wrong I feel excitedly happy, "on top of the world".	___	___
24) I wake up fresh and rested most mornings.	___	___
25) It is all right to get around the law if you don't actually break it.	___	___
26) Parents are much too easy on their children nowadays.	___	___
27) I have a tendency to give up easily when I meet difficult problems.	___	___
28) I certainly feel useless at times.	___	___
29) I am sometimes cross and grouchy without any good reason.	___	___
30) My parents have often disproved of my friends.	___	___
31) Teachers often expect too much work from the students.	___	___
32) My way of doing things is apt to be misunderstood by others.	___	___
33) I have had blank spells in which my activities were interrupted and I did not know what was going on around me.	___	___
34) I have the wanderlust and am never happy unless I am roaming or traveling about.	___	___
35) I like to keep people guessing what I'm going to do next.	___	___
36) I think I would like to fight in a boxing match sometime.	___	___

	TRUE	FALSE
37) If given the chance I would make a good leader of people.	____	____
38) I like to plan a homestudy schedule and then follow it.	____	____
39) I have often found people jealous of my good ideas, just because they had not thought of them first.	____	____
40) In school I was sometimes sent to the principal for cutting up.	____	____
41) People pretend to care more about one another than they really do.	____	____
42) I like to read about history.	____	____
43) I am so touchy on some subjects that I can't talk about them.	____	____
44) The future is too uncertain for a person to make serious plans.	____	____
45) I like to talk before groups of people.	____	____
46) The man who provides temptation by leaving valuable property unprotected is about as much to blame for its theft as the one who steals it.	____	____
47) I am often bothered by useless thoughts which keep running through my mind.	____	____
48) I like to plan my activities in advance.	____	____
49) I must admit I find it very hard to work under strict rules and regulations.	____	____
50) I like large, noisy parties.	____	____
51) I sometimes feel that I am a burden to others.	____	____
52) Only a fool would try to change our Canadian way of life.	____	____
53) I always try to do at least a little better than what is expected of me.	____	____
54) Lawbreakers are almost always caught and punished.	____	____
55) I would be very unhappy if I was not successful at something I had seriously started to do.	____	____

		TRUE	FALSE
56)	I dread the thought of an earthquake.	____	____
57)	I often lose my temper.	____	____
58)	My parents were always very strict and stern with me.	____	____
59)	I am bothered by people outside, on streetcars, in stores, etc., watching me.	____	____
60)	I often get disgusted with myself.	____	____
61)	Society owes a lot more to the businessman and the manufacturer than it does to the artist and the professor.	____	____
62)	I think I would like to belong to a motorcycle club.	____	____
63)	I used to like it very much when one of my papers was read to the class in school.	____	____
64)	I feel that I have often been punished without cause.	____	____
65)	I don't seem to care what happens to me.	____	____

SECTION II

The following questions are intended to evaluate your impressions of your Educational Psychology 269 seminar leader and pertain directly to your experience in your seminar this term. The best answer to each item is your personal opinion based on your personal perceptions. Each of the following statements describes a basic component of teaching. Give your seminar leader an overall rating for each component, reserving the highest scores for unusually effective performance. Use the following scale to determine your ratings.

a) well below average
b) below average
c) average
d) above average
e) well above average

1) Discusses points of view other than his own. ____
2) Explains clearly. ____
3) Encourages class discussion. ____
4) Has a genuine interest in students. ____
5) Is a dynamic and energetic person. ____
6) Has an interesting style of presentation. ____
7) Contrasts implications of various theorists. ____
8) Invites students to share their knowledge and experience. ____
9) Is friendly towards students. ____
10) Is well prepared. ____
11) Discusses recent developments in the field. ____
12) Presents origins of ideas and concepts. ____
13) Gives lectures that are easy to outline. ____
14) Relates to students as individuals. ____
15) Seems to enjoy teaching. ____
16) Gives references for more interesting and involved points. ____
17) Is enthusiastic about his subject. ____
18) Seems to have self-confidence. ____

19) Recognizes and greets students out of class. ____

20) Clarifies thinking by identifying reasons for questions. ____

21) Invites criticism of his own ideas. ____

22) Is careful and precise in answering questions. ____

23) Summarizes major points. ____

24) Is accessible to students out of class. ____

25) Knows if class is understanding him or not. ____

26) States objectives for each seminar. ____

27) Knows when students are bored. ____

28) Is valued for advice not directly related to the course. ____

29) Varies the speed and tone of his voice. ____

30) Presents facts and concepts from related fields. ____

31) Identifies what he considers important. ____

32) Has interest and concern in the quality of his instruction. ____

33) Respects students as persons. ____

34) Has a sense of humour. ____

35) Emphasizes conceptual understanding. ____

36) Has students apply concepts to demonstrate understanding. ____

SECTION III

The following items pertain directly to your experience in your 269 Seminar this year. The best answer to each item is your personal opinion based on your personal perceptions.

Choose 1, 2, 3, 4, 5, 6, 7, 8, or 9, depending on how you feel in each case. Choose only one number for each of the seventeen items. (The numbers 1, 2, 3, 4, 5, 6, 7, 8, and 9, are on a continuum from one extreme to the other extreme.)

Sample Item:

Your seminar instructor

1 2 3	4 5 6	7 8 9
Acts like an instructor all of the time	Acts like an instructor most of the time but sometimes more like a friend	Acts more like a friend than he acts like an instructor

Please mark every one of the fifteen items

1) Your seminar instructor is mainly interested in

1 2 3	4 5 6	7 8 9
How many facts you know	If he gets an idea across to you	Whether you can think for yourself

2) Your seminar instructor

1 2 3	4 5 6	7 8 9
Makes you do what he wants you to most of the time	Makes you do what he wants you sometimes	Lets you make your decisions most of the time

3) The seminar instructor

1 2 3	4 5 6	7 8 9
Doesn't like to talk about any subject that isn't part of the course	Talks about your course subject a lot but encourages the discussion of other matters	Likes to talk about different subjects and is interested in your personal opinion

4) The students in your seminar

1 2 3	4 5 6	7 8 9
Only speak when the instructor asks them a question	Feel free to ask the instructor questions	Feel free to speak up at almost anytime

5) When the instructor or another student in the seminar says something you don't agree with

1 2 3	4 5 6	7 8 9
You try not to start an argument and feel that it's not your job to tell him he's wrong	You tell why you disagree when the instructor asks you to	You feel free to discuss and argue your point of view whether the teacher asks you or not

6) Your seminar instructor

1 2 3	4 5 6	7 8 9
Usually bases his opinion on what the book says	Usually gives you another point of view in addition to what the book says	Tells you that books, professors, and customs are not always right

7) If you were to call your instructor by his first name

1 2 3	4 5 6	7 8 9
He wouldn't like it and would tell you not to do it	He would tell you that it's alright to call him by his first name outside of class but that he would prefer you to call him by his last name while he's in class	He wouldn't mind at all

8) The seminar instructor

1 2 3	4 5 6	7 8 9
Never tells jokes while he is teaching and does not like it when the students joke around	Sometimes tells a joke to get a point across	Always tells funny stories and encourages the students to tell about funny things that have happened to them

9) The seminar instructor spends a lot of time

1 2 3	4 5 6	7 8 9
Telling you about tests, grades and about how the course is planned	Giving you an idea about tests, grades and the course but not too much time giving you details	Asking you to make your decisions about tests, grades, the course plan or group projects

10) When we are working on a group project or in a committee, the instructor

1 2 3	4 5 6	7 8 9
Tells us exactly what to do	Suggests ways that the project might be handled	Lets the group members decide how the project should be handled

11) When you get angry at the seminar instructor

1 2 3	4 5 6	7 8 9
You usually hold it in because the instructor would punish any show of anger	You feel that you can tell the instructor why you're angry	You feel that you could show your anger without the instructor becoming angry

12) The seminar instructor

1 2 3	4 5 6	7 8 9
Acts like an instructor all of the time	Acts like an instructor most of the time but sometimes seems more like a friend	Acts like a friend more than he acts like a teacher

13) In this seminar

1 2 3	4 5 6	7 8 9
Work is assigned every class and must be handed in next class	Work is divided between work which is due every day and a few long-term projects each term	Usually consists of long-term projects

14) In our seminar students work together in a group or committee

1 2 3	4 5 6	7 8 9
Never	Sometimes	A great deal

15) When there is work which has to be done with another student we are

1 2 3	4 5 6	7 8 9
Usually told with whom to work	Can sometimes choose our own partner	Can usually decide with whom we want to work

SECTION IV

The following items pertain directly to your experience in your 269 seminar this year. The best answer to each item is your personal opinion based on your personal experience.

Select 1, 2, 3, 4, 5, 6, 7, 8, or 9 depending on how you feel in each case. For example, consider the following sample item:

I feel like skipping this seminar

more often than my other classes — 1 2 3 4 5 6 7 8 9 — less often than my other classes

Select the number which would indicate the degree to which your feelings are like the statement on the left or the statement on the right. For example, if you selected 6 that would mean that the statement on the right is a little more like your feelings; if you selected 9 that would mean that the statement on the right is very much like your feelings. On the other hand, if you selected 4 that would mean that the statement on the left is a little like your feelings; if you selected 1 that would mean that the statement on the left is very much like your feelings, and so on. That is, the numbers 1, 2, 3, 4, 5, 6, 7, 8, and 9 are on a continuum from one extreme to the other extreme.

Select only one number for each of the 10 items.

Please answer every one of the 10 items.

1) I am very

unsatisfied with this instructor — 1 2 3 4 5 6 7 8 9 — satisfied with this instructor

2) I would be very satisfied if my other courses were

less like this seminar — 1 2 3 4 5 6 7 8 9 — more like this seminar

3) I like this instructor much

less than most other instructors I have had or have now — 1 2 3 4 5 6 7 8 9 — more than most other instructors I have had or have now

4) I would be very satisfied if my other instructors were

less like this instructor	1 2 3 4 5 6 7 8 9	more like this instructor

5) My feelings toward this seminar are

very unfavourable	1 2 3 4 5 6 7 8 9	very favourable

6) My feelings toward this instructor are

very unfavourable	1 2 3 4 5 6 7 8 9	very favourable

7) I am very

unsatisfied with this seminar	1 2 3 4 5 6 7 8 9	satisfied with this seminar

8) I

dislike this instructor	1 2 3 4 5 6 7 8 9	like this instructor

9) I

dislike this seminar	1 2 3 4 5 6 7 8 9	like this seminar

10) I like this seminar much

less than most other courses I have had or have now	1 2 3 4 5 6 7 8 9	more than most other courses I have had or have now