

AN INVESTIGATION OF THE INFLUENCE OF AN
ORIENTATION COURSE ON ACADEMIC
SUCCESS AMONG FRESHMAN
STUDENTS

By

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PREFACE

This thesis is concerned with a systematic investigation of freshman orientation in a small, state college in the Midwest. The specific objective is to study the effectiveness of an existing orientation program as measured by academic success. In addition, the impact of proposed format changes are experimentally tested.

An experimental design of the type employed in this study is possible only when the cooperating institution is willing to modify procedures to permit randomization, new treatments, more staff and periodic communication with the researcher. As a result, I would like to take this opportunity to express my appreciation to the faculty and administration of Missouri Southern College. I am especially indebted to Dr. Floyd Belk, Dean of Student Personnel Services, for his encouragement to conduct such an investigation. In addition, I am grateful for the devotion and concern shown by Gene Mouser, Larry Karst, Ann Wilson, and Glen Dolence as they supervised the orientation function under these experimental conditions.

I would also like to express my appreciation for the assistance and guidance given by the following members of my committee: Professor Frank McFarland, who provided often needed counsel and encouragement; Dr. Bill Elsom, who reviewed the design and recommended the statistical treatment; Dr. Robert Mangum, who gave so generously of his time and whose suggestions were quite beneficial; Dr. James Seals, for his

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CHAPTER I

INTRODUCTION

Shortly following the conclusion of World War I, student personnel workers responded to a growing concern for student mental health through the extensive use of student counseling. Counseling of all kinds, physical, emotional, academic and spiritual, was deemed important. Student personnel workers utilized both group and individual techniques. Group counseling or group guidance usually expressed itself as some form of orientation program. In a number of cases, this assumed the definite form of a "Freshman Week," an introductory period of one to seven days preceding the regular work of the term. Other institutions resorted to orientation courses which varied in length from two weeks to a full college year. In any case, personnel workers devoted themselves to the task of helping new students adjust to a new environment (Brubacher and Rudy, 1969). Procedures of this type attempted to teach freshmen to use the library, study effectively, participate in campus activities and acquaint themselves with institutional purposes and aims (Fritts and Swift, 1928).

The strength of the mental health movement was partially reflected in the growth of orientation programs. Only six colleges supported such a program in 1916, while virtually all institutions of higher education by 1968 were concerned with the anxieties created by college attendance (Brubacher and Rudy, 1968). The necessity of orientation was also

related to the public cry "College for all!" Obviously, the universal opportunity for higher education had radically changed the composition of the current student body (Trent and Medsker, 1968). Larger numbers of students and greater diversity among student populations placed yet another strain on individual adjustment and the student personnel responsibility for assisting the student.

This task called orientation possessed components that seemed strikingly comparable to the objectives of the entire student personnel program (Mueller, 1961). Needs of an intellectual, social, emotional, moral and physical nature were exposed early in the collegiate experience and the intent to assist in meeting those needs was reflected in the "Student Personnel Point of View" (American Council on Education, 1949).

Freshman orientation seemed to have content validity in view of assumed student need and the desire of student personnel workers to meet those needs. Recently, however, questions have arisen relative to the necessity, purpose and effectiveness of such programs. One authority expressed the notion that an expanded high school guidance and counseling function had the responsibility for preparing the student in the transition to college and that college orientation programs have been maintained as the result of a director aspiration (Black, 1964). Another critic suggested that orientation after a student reaches college was ineffective because it came too late (Hudson, 1962). Riesman (1961) described a freshman week as "disorientation week" when "squads of upperclassmen" attempted to sell something that was of little value or no value to the entering student. Caple (1964) was critical

of orientation because of an inability to demonstrate a more useful purpose.

If orientation was essential to the student's adjustment to college, it should be evident in reduced attrition rates and improved marks in courses but research reported in Chapter II of this document failed to support such an assumption.

Orientation at Missouri Southern College

Missouri Southern College required all new freshmen to enroll in Psychology 100 (Freshman Orientation). This sixteen week course, designed and taught by the student personnel staff, was predicated upon the belief that freshmen fail in college for reasons other than intellectual capacity; that there were certain facts that could be presented to the new student that increased his opportunity to succeed.

Psychology 100 was developed as a "structured" course since activities were pre-planned by the student personnel staff. These activities included the use of lectures, diagnostic tests, films and filmstrips, with only minimal discussion as section size typically varied between ninety and 250 students. Course objectives included teaching freshmen how to study, how to use the library and how to become involved with campus activities.

Statement of the Problem

Although unsystematic student feedback suggested that Psychology 100 was useful, freshman attrition had remained fairly stable (Self-Study of Missouri Southern College, 1970). This fact, coupled with the previously cited criticisms in the literature, provided the basic

impetus for the study. The student personnel staff recognized the possibility of an existant gap between meeting personal adjustment needs of freshmen and providing freshman orientation. In addition, the staff possessed enthusiasm for empirically validating course format innovations. Specifically, they were concerned with testing the impact of smaller section sizes, an unstructured methodology and mandatory attendance of all freshmen in Psychology 100.

Purpose of the Study

The purpose of this study was to investigate experimentally the effectiveness of Psychology 100 and to test the probable impact of proposed changes in the format of the course. The following research questions seemed appropriate:

1. Does freshman orientation contribute to the academic success of freshmen students at Missouri Southern College?
2. Is academic success affected by measureable levels of student motivation?
3. Is academic success affected by an unstructured method of presentation in Psychology 100?
4. Is academic success affected by reducing Psychology 100 class size to twenty-four or fewer?
5. Does freshman orientation have an affect on attrition?

Rationale for Hypotheses

Although several recent institutional studies (Rothman and Leonard, 1967; Gerber, 1970; and Warren, 1970) have failed to demonstrate any significant relationship between orientation and academic success, none

have systematically accounted for such possible variables as class size and an unstructured methodology in conjunction with measureable levels of motivation. Since the researcher can only speculate as to the similarity between other institutions and Missouri Southern College, all hypotheses are stated in the null form.

Hypotheses

Hypotheses related to academic success as affected by type of participation and level of motivation are as follows:

Hypothesis I: There is no significant difference in the mean number of semester hours completed among Structured, Unstructured and Chance orientation groups.

Hypothesis II: There is no significant difference in the number of semester hours completed by groups identified as High, Average or Low in motivation.

Hypothesis III: There is no significant difference in the mean number of semester hours completed among groups when type of participation and level of motivation are considered as an interaction.

Hypothesis IV: There is no significant mean difference in grade-point average among Structured, Unstructured and Chance orientation groups.

Hypothesis V: There is no significant difference in grade-point average among groups identified as High, Average or Low in motivation.

Hypothesis VI: There is no significant difference in the mean grade-point average among groups when type of participation and level of motivation are considered as an interaction.

Hypotheses related to academic success as affected by type of participation, size of class, and level of motivation are as follows:

Hypothesis VII: There is no significant difference in the mean number of semester hours completed between large and small orientation groups.

Hypothesis VIII: There is no significant difference in the mean number of semester hours completed when type of participation and size of class are considered as an interaction.

Hypothesis IX: There is no significant difference in the mean number of semester hours completed when size of class and level of motivation are considered as an interaction.

Hypothesis X: There is no significant difference in the mean number of semester hours completed when type of participation and class size and level of motivation are considered as an interaction.

Hypothesis XI: There is no significant difference in grade-point average between large and small orientation groups.

Hypothesis XII: There is no significant difference in grade-point average when type of participation and size of class are considered as an interaction.

Hypothesis XIII: There is no significant difference in the grade-point average when class size and level of motivation are considered as an interaction.

Hypothesis XIV: There is no significant difference in the grade-point average when type of participation, class size and level of motivation are considered as an interaction.

Hypotheses related to attrition as influenced by type of participation, class size and level of motivation are as follows:

Hypothesis XV: There is no significant relationship between type of participation and the persistence-withdrawal dichotomy.

Hypothesis XVI: There is no significant relationship between type of participation and size of class in terms of the persistence-withdrawal dichotomy.

Hypothesis XVII: There is no significant relationship between levels of motivation in terms of the persistence-withdrawal dichotomy.

Theoretical Framework

Definitions of Terms

Academic success - The achievement of the freshmen as measured by semester hours completed and grade-point average during the freshman year.

Withdrawals - Those first-time freshmen students who terminate attendance at Missouri Southern College at any point during the study.

Persistors - Those first-time freshmen students who persisted in attendance throughout the freshman year.

Size of groups -

- a. Large - Those sections of Psychology 100 which were composed of ninety or more students.
- b. Small - Those sections of Psychology 100 which were composed of twenty-four or fewer students.

Type of participation -

- a. Structured - Formal orientation groups with pre-planned activities designed to meet course objectives as described in the college catalog.

- b. Unstructured - Informal orientation groups where both course objectives and content originated with the participating students.
- c. Chance - Orientation which may occur outside the classroom as the result of random contact among students and staff.

Student motivation -

- a. High motivation - Those freshmen who scored at the eightieth percentile or higher on the Achiever Personality Scale of the Opinion, Attitude and Interest Survey.
- b. Average motivation - Those freshmen who scored between the twenty-first and seventy-ninth percentile on the AP Scale.
- c. Low motivation - Those freshmen who scored at the twentieth percentile or lower on the AP Scale.

Assumptions

The prosperity of an autonomous nation is dependent in great measure upon an enlightened populous. College or university attendance has become one of the most prestigious symbols of enlightenment in the American culture.

As a result, matriculation to institutions of higher education has not only risen significantly in the past but will continue to increase in the future (Tickton, 1969). However, attrition rates remain at a high (forty percent) and stable level, suggesting an inability to meet student needs (Summerskill, 1964). Student failure represents a double disaster. The individual falls short of personal aims and the society as a whole is not able to maximally utilize its human resources.

Missouri Southern College is an advocate of the "open door policy" similar to the "open door" concept described by Clark (1960). The inference contained in such a policy is one of student self-selection prior to matriculation. It is therefore assumed that all students can achieve some significant purpose even if that purpose is somewhat tenuous or obscure. Therefore, both poor academic performance and attrition are seen as symptoms of maladjustment since the collegiate experience resulted in something less than success.

This rationale is frequently attacked from the viewpoint that many of the potential failures should not be in college anyway. Whether these students should or should not enroll in college seems irrelevant since they are, in fact, enrolled for a variety of reasons, some unknown even to the student.

It is perhaps unrealistic to assume that Psychology 100 can be "all things to all people" but this truism does not provide relief from continuous evaluation and a constant search for relevancy. It was assumed that no student matriculates in order to withdraw at a later date. The student did not matriculate in order to perform poorly. Therefore, the theme of Psychology 100 was to establish conditions so that students may successfully complete a college degree. Specifically, orientation objectives were related to "personal adjustment" which was measured in terms of academic success.

The following assumptions were made prior to the initiation of this study:

1. No student matriculated to Missouri Southern College in order to withdraw or perform poorly.

2. The effectiveness of Psychology 100 was evaluated in terms of academic success.

3. The implications of this study will prove valuable in justifying, modifying, or eliminating Psychology 100.

4. The findings of this study were valuable to the individual student as well as the whole campus community.

Limitations of the Study

Any generalizations drawn from this study are limited to first-semester freshmen at Missouri Southern College. Therefore, application of the results from this investigation to any other population should be undertaken with considerable caution.

No attempt was made to control Chance orientation which may result from interactions among Psychology 100 participants, upper-class students and staff.

CHAPTER II

REVIEW OF LITERATURE

A historical overview of freshman orientation suggested that this activity has changed in an evolutionary manner. This activity moved from a few institutions, which offered a simple and brief orientation (usually one day) designed to orient the student to his physical surroundings to many colleges which require a formal credit course that purported to assist the student with a myraid of what, "we fondly believe to be the needs of the new students" (Grier, 1966, p. 37). The change in orientation objectives and design were perpetuated by large enrollments, lack of homogeneity in student bodies, the growing complexities of the college curriculum, and the conflict and confusion concerning their educational objectives (Knode, 1932). Projections reflect larger enrollments and greater heterogeneity, therefore, it seemed appropriate to study not only the current impact of a freshman orientation program but also to search for more effective means of meeting student needs.

The review of related research which follows is grouped into three areas:

- (1) The impact of freshman orientation on academic success;
- (2) Teaching method as a variable in academic success; and
- (3) Motivation as a variable in academic success.

The Impact of Freshman Orientation

Bennett (1941), in the Encyclopedia of Educational Research, described empirical research prior to 1940 as sparse, but she reported favorable and significant differences between orientation participants and non-participating controls on such variables as quality of thinking, adjustments to campus life, choices in academic and extracurricular decisions, and academic planning. However, no scholastic differences were noted. She concluded that the data were suggestive of strengths as well as weaknesses. The "how to study courses" (how to study is typically a part of the traditional freshman orientation course) were consistently reported of significant value along dimensions which included grade-point average (Turrell, 1937), improved reading ability and scholarship (Book, 1937). Pressy (1928) found the "how to study" courses beneficial for probationary students but she concluded that scholastic aptitude was an important variable in determining which students would profit sufficiently from the training to be retained in school. Eurich (1931) generalized from thirty-one separate studies that there was a possibility of definite improvement as the result of training in study methods.

The 1960 edition of the Encyclopedia of Educational Research reported, "The entire area of orientation is one in which there is a marked lack of definitive research." (Lifton, 1960, p. 304). The 1969 edition of the same volume conspicuously omitted the topic of orientation (Ebel, 1969).

Reiter (1964) reported significant attitude change for students who participated in a six-month seminar orientation course. He concluded that the development of a "mature" philosophy of life, and the

development of more effective interpersonal relationships could be modified by a procedure of this type. A difference in scholarship was not noted.

A similar study reported no significant difference between orientation participants and non-participants when grade-point averages were compared after one semester (Rothman and Leonard, 1967).

Gerber (1970) studied four different approaches to freshman orientation including a chance orientation group. He reported significant findings only in that college rules and regulations were more effectively taught by a formal approach as opposed to informal or chance orientation. Differences in attrition were not significant but trends suggested that the weaker student could be maintained if he was involved in an orientation procedure. Grade-point averages were also nonsignificant but the chance orientation group remained higher, supporting the contention that orientation was influential in holding the weaker student.

Warren (1970) reported similar results when he studied Phillips University freshmen at Enid, Oklahoma. He concluded that a structured orientation course had little impact on academic success. This report supported the Gerber study in the trend toward higher grade-point average for the chance orientation group. In contrast to Gerber, a lower withdrawal incidence in the chance orientation group was noted which contradicted the possibility of a greater impact on weaker students.

More recently Kopecek (1971) at the State University of New York studied three specially designed approaches to freshman orientation.

While using a treatments-by-levels design, he formed three treatment groups (open, closed and orientation by mail) with two levels (closed-minded students and open-minded students) in each treatment. He concluded that it was possible to design programs that result in statistically significant differences in mean grade-point average and level of knowledge about a campus. It must be pointed out, however, that the superior treatment group (open with open-minded students) was significantly higher in grade-point average only when tested at the .10 level as opposed to the conventional .05 level of significance. He was able to demonstrate that withdrawals were affected by any type of orientation.

Teaching Method as a Variable

Studies on teaching method related to class size have been quite prolific for elementary and secondary schools. However, colleges and universities have been interested only in recent years as the result of enrollment increases. Bosley reviewed the bulk of earlier publications and observed:

. . . A majority of the small class versus large class investigations have not been overwhelmingly conclusive . . . Most experiments have used subject fields in which the lecture technique is the major instructional approach. (Bosley, 1962, p. 148)

Siegel (1959) tested achievement in a variety of college students taught in large groups by television and live lecture. He found small groups (nineteen to thirty-two) not significantly better except in a second semester geography course. Additional studies, Macomber and Siegel (1957), Commarosano and Santopolo (1958), and Nelson (1959) reported similar results with a variety of courses and group sizes.

More recent studies indicate that the effectiveness of method is dependent on the personality characteristics of the learner. Such student characteristics as willingness to accept responsibility for learning, need for achievement and personal independence are positively correlated with success in a group-centered (unstructured) class situation (Patton, 1955).

Another authority, after reviewing some thirty research efforts, reported on the status of teaching effectiveness. He concluded that effectiveness:

- 1) depends upon one's objective. Lectures . . . are effective for teaching knowledge but not for teaching critical thinking.
- 2) depends upon the instructor. Some are (effective), some are not.
- 3) depends upon the student. A type of student who profits from one method may do poorly when taught by another method which is effective for another type of student.
- 4) depends upon the subject matter. Some material may be especially fitted for teaching machines other material may not. (McKeachie, 1962, p. 15)

Based on the conclusions of McKeachie and Patton, the possibility was raised that academic success as the result of teaching may be in part due to level of academic motivation.

Academic Motivation as a Variable

Several studies have attempted to investigate a relationship between academic motivation and academic success. Typically, three methods have been used: projective techniques, questionnaires, and a combination of the two. Results seemed to indicate that questionnaire measures provide low positive correlations with performance while projective measures were inconsistent (Milikian, 1958; and Hills, 1958).

In general, the research did not indicate that academic motivation was related to academic success.

Fricke (1965) developed the Achiever Personality (AP), a subscale of the Opinion, Attitude and Interest Survey (OAIS), which purports to measure a dimension related to academic success while remaining independent of academic ability. He reported in the OAIS Manual (1965) that inclusion of the AP variable improved the prediction of grade-point average for most groups even when combined with ability tests. The improvement averages about seventeen percent in variance accounted for. Webb (1965) found the percentage of gain in variance accounted for to vary from 11.09 to 6.74 in a study of entering freshmen at Emory University in 1962 and 1963. When controlling for sex, the gain for women was 19.40 in 1962 and 9.09 in 1963, while men increased 16.81 in 1962 and 25.27 in 1963.

Although many correlations are reported in the OAIS Manual, no tests of statistical significance were cited. In spite of this limitation, Buros (1965) reported that the scale (AP) merits further research.

The chief conclusions which can be drawn from this review of the literature are:

1. Freshman orientation as an educational activity persisted despite the apparent disparity between course objectives and actual academic success.
2. The need still exists for experimental research on the relationship between orientation and academic success.
3. Method of instruction is a relevant variable which has only recently appeared in orientation studies.

4. Class size may be a relevant variable which has been overlooked in orientation studies.

5. A promising instrument (Achiever Personality) has been developed which may permit the study of academic success under varying levels of motivation.

CHAPTER III

METHODOLOGY

This chapter deals with a description of the methodological characteristics of the study. Included are detailed accounts of sampling processes, unique treatment of groups, instrumentation and statistical procedures.

The population for this investigation consisted of 673 first semester freshmen who appeared for preliminary testing, advisement and scheduling during August, 1970 at Missouri Southern College. This group of students did not include freshmen enrolled in twelve or fewer semester hours.

Design

Selection of Sample

The population responded to the Opinion, Attitude and Interest Survey prior to the opening of the fall term 1970-1971. During the same time period (one week before classes began) the students were pre-advised and ultimately selected appropriate courses for the fall term.

Psychology 100 was one of the three courses required of all first semester freshmen enrolled in twelve semester hours or more. An adviser assisted each student in the selection of appropriate courses; however, actual scheduling (time and instructor) was done by computer. Computer

scheduling was based on a system of priorities with the three required courses possessing the highest priority. The computer procedure avoided a systematic bias by processing proposed schedules on a first come, first served basis while constantly controlling the number of students in each of the five sections of Psychology 100. The following section frequencies were tabulated after the experimental sample had been selected:

	<u>Section</u>	<u>All Students</u>	<u>Freshmen in Population</u>
	1	185	164
	2	179	159
	3	200	177
	4	103	91
	5	92	82
Total	5	759	673

The column labeled "All Students" was composed of transfer students and late matriculators as well as those students in the population. Sections four and five were approximately one-half as large as Sections one, two, and three as the result of limited classroom size. The computer maintained a bias avoidance by assigning every fourth student to Section four or five, alternately. Other disparities in section size resulted from schedule changes during the first week of classes; however, none of the students selected for data collection changed sections.

Each of the five intact sections was stratified into three distinct (High, Average, or Low) academic motivation levels based on individual percentile scores on the Achiever Personality Scale of the Opinion, Attitude and Interest Survey.

After stratification, the experimental sample of 144 subjects was drawn as follows:

1. Forty-eight subjects (sixteen from each motivation level) were randomly selected from Section one to participate in a Structured type of orientation. This part of the sample was randomly subdivided into two groups of twenty-four (eight from each motivation level) and designated as either Structured-Large (SL) or Structured-Small (SS). The SS group was separated for small group instruction while SL subjects were identified for data collection but remained in Section one for large group instruction.

2. Forty-eight subjects (sixteen from each motivation level) were randomly selected from Section two to participate in an Unstructured type of orientation. This part of the sample was randomly subdivided into two groups of twenty-four (eight from each motivation level) and designated as either Unstructured-Large (UL) or Unstructured-Small (US). The US group was separated for small group instruction while UL subjects were identified for data collection but remained in Section two for large group participation.

3. Forty-eight subjects (sixteen from each motivation level) were randomly selected from Sections three, four, or five to experience Chance Orientation (CO). That is, these subjects were separated from their respective Sections and informed that section sizes were unmanageably large and therefore the Psychology 100 requirement would be postponed until the spring semester. None of the selected students objected to the postponement. Since these subjects experienced Chance orientation, they could not be subdivided into large and small groups. Figure 1 is a graphic representation of the selection and assignment procedure.

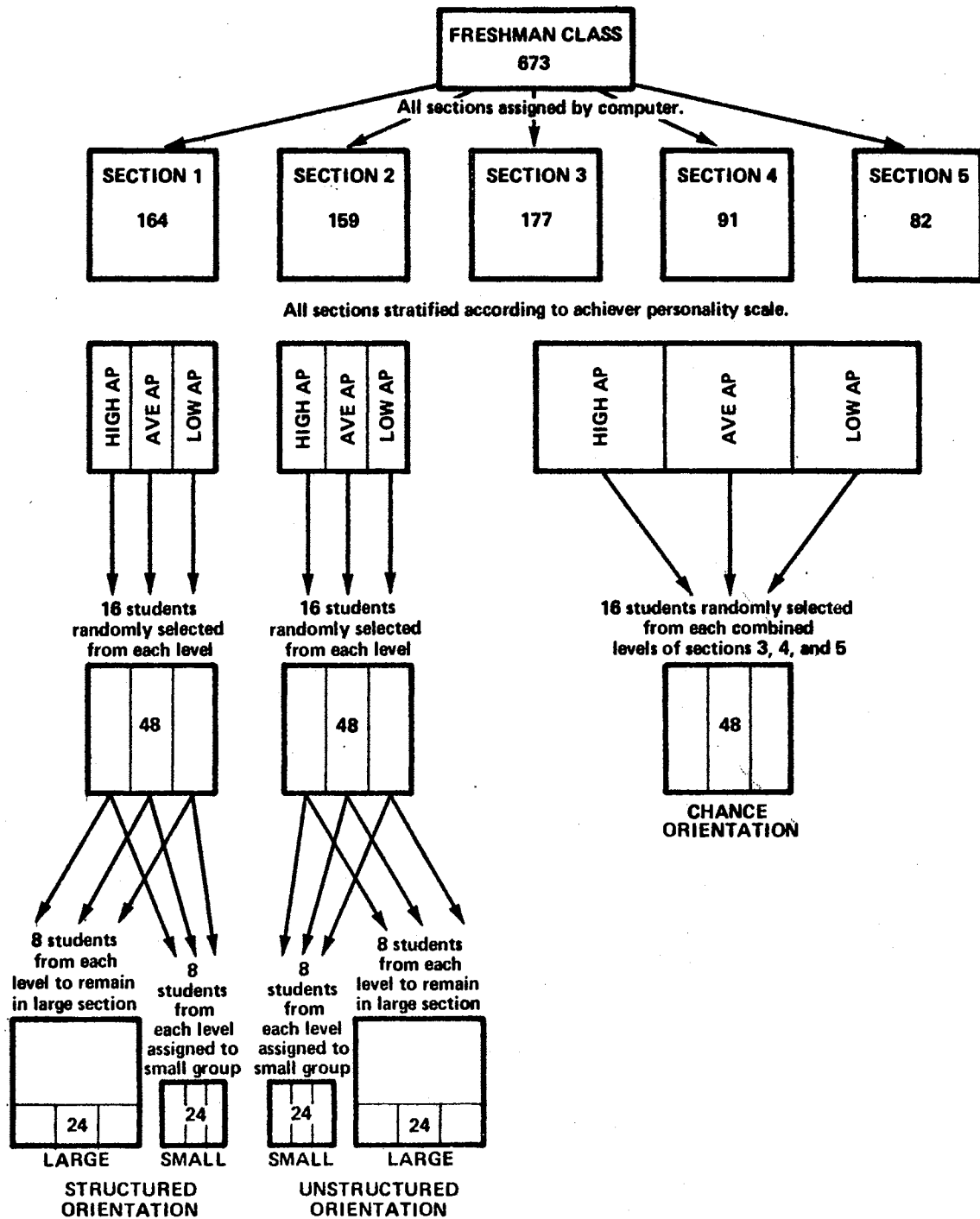


Figure 1. Graphic Representation of the Selection and Assignment Procedure

Treatment of Groups

The entire freshman population with the exception of Chance orientation group participated in some type of orientation. However, only the randomly selected research subjects were utilized for data collection. The following paragraphs describe the nature of Psychology 100 for each of the orientation groups.

The selected subjects in the group designated SL pursued freshman orientation (Psychology 100) in the traditional manner. They were exposed to pre-planned activities and resulting discussions as members of a large class. The total section size with the SS group excluded was 140.

The SS group was exposed to similar pre-planned activities and resulting discussions but the total section size never exceeded twenty-four.

The selected subjects in the group designated UL satisfied the freshman orientation requirement as members of a large section of 135. All activities and resulting discussions were student initiated. The only structure provided by the staff were preface remarks:

. . . Freshman orientation will become what you decide to make it. You, as an individual, as a member of this large body will determine the focus of this course. The staff and I will answer questions, help you locate information or cooperate in any way but we will not lecture nor will we veto any topic which you decide is relevant. I will recommend that you divide into small discussion groups (twenty), select a leader, determine what is important and permit your group leader to transmit your decisions to the larger group. Groups may change, leaders may change but the responsibility for the content and presentation of that content is yours.

The leaders of these subgroups operated as a panel, each presenting the subgroup material to the entire section. Discussion topics were open to panel members or any student enrolled in the section. Typical topics

included campus information, student rights, the drug problem and how to study. An unsystematic staff evaluation of the procedure suggested that students were initially interested in the approach and took the task as a personal responsibility. However, as the semester wore on, interest dwindled and discussion sessions became less well organized. Some resentment seemed to develop toward the staff because they were unwilling to accept the responsibility for the course.

The US group was charged with the same responsibility as the UL group except the twenty-four subjects functioned as a unit. No subgroups were encouraged. Topics of discussion were similar in both US and UL groups but staff evaluation of the US procedure included neither dwindling interest nor overt resentment.

All groups (SL, SS, UL, US) met once each week (fifty minute block) during the fall term of 1970. Chance Orientation subjects did not experience any formal orientation, however, they were recalled during the final week of the semester to arrange for a spring schedule.

Instrumentation

The Opinion, Attitude and Interest Survey is an instrument devised by Benno G. Fricke (1965) primarily for college bound twelfth graders and for entering college freshmen. It is an empirically derived test designed to measure comprehensive aspects of the normal personality. It is multidimensional inventory which yields fourteen scores from true-false responses to 396 self-descriptive and attitudinal items.

Of particular interest to this study was the Achiever Personality Scale (eighty-six items) which purports to:

. . . measure personality factors associated with the traditional criterion of academic success, grades. Students who score high (80th percentile or higher) . . . tend to realize their potential ability and/or achieve high grade-point averages in college. The AP scale predicts college grades about as well as the typical academic ability test. Furthermore . . . scores from AP have a negligible correlation with scores from ability tests; that is, this scale measures something important in academic success not measured by ability test. In short, AP is a good measure of academic motivation and conscientiousness (Fricke, 1964, p. 2).

Fricke (1964) supported the above statement with validity data supplied as the result of his own efforts as well as the work of several other researchers. A more recent study reported somewhat less enthusiastic AP validity data but concluded, "The OAIS may be helpful in the identification and measurement of variables that may be either facilitating or inhibiting to adjustment and satisfaction in college." (Graff and House, 1970, p. 133) Hoehn (1969) reported that the AP scale did make a statistically significant contribution to the prediction in GPA for the total and for the female population when she studied a group enrolled in Freshman Orientation in the Department of Education at Oklahoma State University. She concluded:

. . . Results of this analysis indicated that approximately 37% of the variance in GPA could be explained by ACT scores and AP combined . . . These results are similar to those reported by Fricke. (p. 87)

The decision to utilize the AP scale of the OAIS as a measure of academic motivation was partially dictated by existing extensive use of the instrument with freshmen at Missouri Southern College. In addition, the Director of Institutional Research has already conducted two unreported studies which indicate that the AP scale did, in fact, measure a degree of motivation among mathematics and English students.

This study assumed that academic motivation was a non-cognitive factor which existed on a continuum. The critical discrimination points were chosen to coincide with Fricke's (1964) definition of high average and low in motivation.

Statistical Procedures

The nature of the design necessitated three distinct statistical treatments. Part I utilized a Treatment-By-Levels Analysis of Variance (Brunner and Kintz, 1968) to analyze academic success in view of the type of participation treatment (Structured, Unstructured, and Chance Orientation) across three levels (High, Average and Low) in motivation. Separate calculations were made for the first semester, second semester and academic year. In addition, the data were separated for both men and women as well as the total sample. Any main effect significance was followed by Duncan's Multiple Range Statistic (Brunner and Kintz, 1968) to determine the area of rejection.

Part II utilized a three factor Treatment-By-Treatment-By-Levels Analysis of Variance (Brunner and Kintz, 1968) to analyze academic success in view of a type of participation treatment (Structured and Unstructured Orientation), size treatment (Large and Small groups) across three levels of motivation (High, Average or Low). As in Part I, the data were separated by semester but small cell sizes prevented the separation of data by sex. All significant main effects were followed by Duncan's Multiple Range Statistics to determine the area of rejection.

Part III utilized a Chi-Square Statistic (Brunner and Kintz, 1968) to study the persistence-withdrawal dichotomy in view of type of

participation, class size and levels of motivation. The data were separated by semesters but unequal distribution of men and women prevented a separate analysis by sex.

The .05 level of probability was established as the required critical point to reject a null hypothesis.

CHAPTER IV

ANALYSIS OF DATA

Introduction

This chapter deals with a detailed account of the statistical treatment of the data. Each research question and the hypotheses generated by each question was treated separately. All students who withdrew during the investigation were eliminated from the analyses.

Analysis of Homogeneity of Variance

One of the assumptions underlying the use of an F test is that variances between or among the levels of a dependent variable not be significantly different. Cochran's "C" appeared to be a most sensitive measure of homogeneity for multiple groups when cell sizes are unequal (Myers, 1966). Mathematically, Cochran's "C" may be expressed in the following manner:

$$C, df = \frac{Sg^2}{St^2}$$

Where:

Sg^2 = the largest variance

St^2 = the sum of the several variances

df = total sample size less 1.

A summary of the several homogeneity of variance checks are reported in Appendix A, Tables XLV through L. Inspection of these tables reveals one consistent violation of the homogeneity assumption. The level of motivation variable used to identify men who were high, average or low in motivation consistently failed the homogeneity check when GPA was analyzed. This fact seemed responsible for the violations reported for all freshmen when GPA was analyzed. Although these violations were apparent, Boneau's (1970) recent work suggested that such violations were not detrimental because the test remained a remarkably robust test. That is, a test which was only inconsequentially affected by violation of the underlying assumptions. In addition, he has shown that the F test is functionally distribution free, providing sample sizes reach at least twenty-five. Since the violations described in the present investigation were well within the limitations established by Boneau, it seemed justifiable to proceed with the several analyses.

Description of Analysis of Variance

The dependent variables (number of hours completed and GPA) were subjected to a multiple-classification analysis of variance, specifically a Treatments-By-Levels and a Treatments-By-Treatments-By-Levels (Brunner and Kintz, 1968). In such an analysis, the relationship between a dependent variable (such as number of hours completed) and one or more independent variables (such as type of participation, size of class and level of motivation) was measured.

To illustrate how the data for a Treatments-By-Treatments-By-Levels was utilized in the study, Tables LI through LVI were presented with raw

data for each of the two dependent variables. The .05 level of probability was established as the critical point of significance for the F values.

Part I

The primary purpose of Part I of the statistical analysis was to determine the impact of the three types of freshman orientation on academic success. However, a secondary concern was to examine the effect of three distinct levels of student motivation and to test for an interaction between type of participation and level of motivation as it related to academic success.

Academic success was defined as number of semester hours completed and GPA. Therefore, these dependent variables were discussed separately and in terms of first semester, second semester and an academic year.

Semester Hours Completed

A Treatments-By-Levels (T x L) Analysis of Variance (AOV) was performed to test the following hypotheses:

Hypothesis I: There is no significant difference in the mean number of semester hours completed among Structured, Unstructured and Chance orientation groups.

Hypothesis II: There is no significant mean difference in the number of semester hours completed among groups identified as High, Average or Low in motivation.

Hypothesis III: There is no significant difference in the mean number of semester hours completed among groups when type of

participation (Structured, Unstructured, or Chance) and level of motivation (High, Average, or Low) were considered as an interaction.

First Semester. Table I presents a T x L AOV of the number of semester hours completed by 137 freshmen (withdrawals omitted) at the end of the first semester.

TABLE I
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF SEMESTER
HOURS COMPLETED BY FRESHMEN AFTER ONE SEMESTER

Source	Sum of Squares	df	Mean Square	F
Total	2353.74	136		
Type of Participation	15.78	2	7.89	0.49
Level of Motivation	194.28	2	97.14	5.99
Participation x Motivation	66.18	4	16.55	1.01
Error	2077.50	128	16.23	

Tabled value of F for 2/136 df is 5.30 at .01 for two-tailed test.
Tabled value of F for 4/136 df is 2.44 at .05 for two-tailed test.

Inspection of Table I indicates that the mean difference in number of semester hours completed among the types of participation were statistically minimal and could be expected to occur by chance more than five times in 100. Thus, Hypothesis I is accepted for the first semester. An F ratio of 5.99 for the level of motivation variable was

larger than the tabled value of 5.30 at the .01 level reflecting a greater than chance difference in the mean number of semester hours completed by those groups identified as High, Average, or Low in motivation. Thus, Hypothesis II was rejected for the first semester.

Duncan's Multiple Range Statistic is shown in Table II to exemplify the area of rejection. Table II reveals only a chance difference in the mean number of hours completed by the High and Average groups. However, both the High and Average group means are significantly greater than the Low in motivation. Thus, a true alternate hypothesis to replace the false null (Hypothesis II) was:

Groups identified as High and Average in motivation complete a significantly greater number of semester hours after one semester than the group identified as Low in motivation.

TABLE II

DUNCAN'S MULTIPLE RANGE TEST OF FIRST SEMESTER HOURS COMPLETED
BY FRESHMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 14.26	Average 13.16	Low 11.36
High	14.26		1.09 (ns)	2.87 (s)
Average	13.16		1.78 (s)	
Low	11.36			

Shortest significant range at .05 is $R_2 = 1.66$, $R_3 = 1.75$.

In addition, Table I reflects only chance differences among the freshman orientation groups when type of participation and level of motivation were considered as an interaction. Thus, Hypothesis III was accepted for the first semester.

Separate T x L AOV were performed for freshman men and women. Table III presents the T x L AOV of first semester hours completed by seventy-three freshman men.

TABLE III
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
FIRST SEMESTER HOURS COMPLETED BY MEN

Source	Sum of Squares	df	Mean Square	F
Total	1687.00	72		
Type of Participation	65.44	2	32.70	1.42
Level of Motivation	90.96	2	45.48	1.98
Participation x Motivation	58.70	4	14.68	0.64
Error	1471.90	64	23.00	

Tabled value of F for 2/64 df is 3.14 at .05 for two-tailed test.

Tabled value of F for 4/64 df is 4.64 at .05 for two-tailed test.

Inspection of Table III indicates that mean differences in Structured, Unstructured, and Chance groups were nonsignificant. Thus, Hypothesis I was accepted for men during the first semester.

Differences in groups identified as High, Average, or Low in motivation may also be expected to occur by chance alone more than five times in 100. Thus, Hypothesis II was accepted for men during the first semester. The interaction between types of participation and levels of motivation was also below the critical point for rejection. Therefore, Hypothesis III was accepted for first semester men.

Table IV presents the T x L AOV of first semester hours completed by sixty-four freshman women during the first semester.

TABLE IV
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
FIRST SEMESTER HOURS COMPLETED BY WOMEN

Source	Sum of Squares	df	Mean Square	F
Total	613.00	63		
Type of Participation	8.25	2	4.13	0.46
Level of Motivation	78.33	2	39.17	4.35
Participation x Motivation	31.59	4	7.90	0.88
Error	494.82	55	9.00	

Tabled value of F for 2/55 df is 3.17 at .05 for two-tailed test.
Tabled value of F for 4/55 df is 2.54 at .05 for two-tailed test.

Examination of Table IV indicates that mean differences in the three types of participation were small and well within the limit

established as a chance occurrence. Thus, Hypothesis I was accepted for first semester women. The F ratio of 0.88 for interactive effects was also small enough to consider the mean differences to be nonsignificant. Thus, Hypothesis III was accepted for women during the first semester. An F ratio of 4.35 across the levels of motivation was larger than the tabled value of 3.17, suggesting that this difference could be expected to occur by chance alone fewer than five times in 100. Therefore, Hypothesis II was rejected for first semester women.

Table V presents the Duncan's Multiple Range Test for mean difference in first semester hours completed by women across the three levels of motivation.

TABLE V
DUNCAN'S MULTIPLE RANGE TEST OF FIRST SEMESTER HOURS COMPLETED
BY FRESHMAN WOMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 14.66	Average 13.59	Low 12.00
High	14.66		1.07 (ns)	2.66 (s)
Average	13.59			1.59 (ns)
Low	12.00			

Shortest significant range at .05 is $R_2 = 1.91$, $R_3 = 2.01$.

Table V indicates that the groups identified as either High or Average in motivation were different but statistically equal. The

groups identified as either Average or Low in motivation were also statistically equivalent. However, a greater than chance difference existed (2.66) when the High motivation and the Low motivation groups were compared. Thus, a true alternate hypothesis to replace the false null (Hypothesis II) was:

Women assigned to the group identified as High in motivation complete a greater number of first semester hours than women assigned to the group identified as Low in motivation.

Second Semester. Table VI presents the T x L AOV of second semester hours completed by 122 freshmen.

TABLE VI
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF SECOND
SEMESTER HOURS COMPLETED BY FRESHMEN

Source	Sum of Squares	df	Mean Square	F
Total	1817.18	121		
Type of Participation	45.70	2	22.85	1.54
Level of Motivation	96.67	2	48.34	3.26
Participation x Motivation	0.19	4	0.05	0.00
Error	1674.62	113	14.82	

Tabled value of F for 2/113 df is 3.80 at .05 for two-tailed test.
Tabled value of F for 4/113 df is 2.89 at .05 for two-tailed test.

Survey of the table indicates that mean differences in second semester hours completed by freshmen participating in the three orientation groups failed to achieve statistical significance. Thus, Hypothesis I was supported. An F ratio of 3.26 fell just short of the tabled value of 3.80 at two and 113 degrees of freedom, reflecting different but nonsignificant mean differences among the three motivation levels. As a result, Hypothesis II was accepted for second semester hours completed. Hypothesis III was also accepted as variance as the result of an interaction was minimal and nonsignificant.

Separate T x L AOV were performed for freshman men and women. Table VII presents summarized data for second semester hours completed by sixty-three men.

TABLE VII
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF SECOND
SEMESTER HOURS COMPLETED BY MEN

Source	Sum of Squares	df	Mean Square	F
Total	1083.43	62		
Type of Participation	147.63	2	73.81	4.09
Level of Motivation	39.82	2	19.91	1.22
Participation x Motivation	12.09	4	3.02	0.18
Error	883.90	54	16.37	

Tabled value of F for 2/54 df is 4.05 at .05 for two-tailed test.
Tabled value of F for 4/54 df is 3.13 at .05 for two-tailed test.

Table VII indicates that an F value as high as 4.09 could be expected to occur by chance alone fewer than five times in 100. Thus, Hypothesis I was rejected for second semester hours completed and required a Duncan's Multiple Range Test to identify the area of rejection. Table III provides the necessary data.

TABLE VIII
DUNCAN'S MULTIPLE RANGE TEST OF SECOND SEMESTER HOURS COMPLETED
BY MEN ACROSS THREE TYPES OF PARTICIPATION

	Means	Unstructured 13.57	Structured 13.30	Chance 10.11
Unstructured	13.57		0.27 (ns)	3.46 (s)
Structured	13.30			3.19 (s)
Chance	10.11			

Shortest significant range at .05 is $R_2 = 2.47$, $R_3 = 2.60$

Inspection of Table VIII indicates nonsignificant mean differences between the Unstructured and Structured orientation groups. However, both the Structured and Unstructured group means were significantly higher than the Chance orientation group. Thus, a true alternate hypothesis to replace the false null (Hypothesis I) was:

Freshman men who participate in either the Unstructured or Structured orientation groups complete a greater number

second semester hours than those who experience only
Chance orientation.

Table VII fails to reflect any significant mean differences among levels of motivation. Thus, Hypothesis II was accepted. Hypothesis III was also accepted as mean differences were nonsignificant with respect to type of participation and level of motivation when treated as an interaction.

Table IX represents a summary of the T x L AOV of second semester hours completed by fifty-nine freshman women.

TABLE IX
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF SECOND
SEMESTER HOURS COMPLETED BY WOMEN

Source	Sum of Squares	df	Mean Square	F
Total	702.54	58		
Type of Participation	15.25	2	7.62	0.61
Level of Motivation	42.66	2	21.33	1.71
Participation x Motivation	20.30	4	5.07	0.41
Error	624.34	50	12.49	

Tabled value of F for 2/50 df is 3.18 at .05 for two-tailed test.
Tabled value of F for 4/50 df is 2.56 at .05 for two-tailed test.

A survey of Table IX indicates that F values as low as .61, 1.71 and .41 could be expected to occur by chance more than five times in 100. Thus, Hypotheses I, II and III were supported for second semester hours completed by freshmen women.

Academic Year. Table X presents a T x L AOV of total hours accumulated by 121 students after one academic year.

TABLE X
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF CUMULATIVE
HOURS COMPLETED BY FRESHMEN AFTER ONE ACADEMIC YEAR

Source	Sum of Squares	df	Mean Square	F
Total	4852.16	120		
Type of Participation	78.37	2	39.19	0.98
Level of Motivation	259.13	2	129.57	3.23
Participation x Motivation	34.83	4	8.71	0.22
Error	4479.83	112	40.00	

Tabled value of F for 2/112 df is 3.80 at .05 for two-tailed test.
Tabled value of F for 4/112 df is 2.89 at .05 for two-tailed test.

Inspection of Table X indicates no significant mean differences among the three (Structured, Unstructured and Chance) orientation groups. Thus, Hypothesis I was accepted. Hypothesis II was accepted as the computed F value of 3.23 fell just short of the tabled value of 3.80

at two and 112 degrees of freedom. A nonsignificant interaction was apparent as an F ratio as low as .41 could be expected to occur by chance more often than five times in 100. Therefore, Hypothesis III was accepted.

Separate T x L AOV were performed for men and women. Table XI presents a summary of data relative to semester hours accumulated by sixty-three freshman men during the academic year.

TABLE XI
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF CUMULATIVE
HOURS COMPLETED BY MEN AFTER ONE ACADEMIC YEAR

Source	Sum of Squares	df	Mean Square	F
Total	3002.00	62		
Type of Participation	292.53	2	146.26	3.11
Level of Motivation	62.40	2	31.20	0.66
Participation x Motivation	108.43	4	26.61	0.57
Error	2540.64	54	47.05	

Tabled value of F for 2/54 df is 3.98 at .05 for two-tailed test.
Tabled value of F for 4/54 df is 3.05 at .05 for two-tailed test.

Inspection of this table reveals an F ratio of 3.11 for types of participation which fell short of the value required for rejection at the .05 level. Thus, Hypothesis I was accepted. In addition,

Hypotheses II and III were supported, reflecting only chance mean differences in levels of motivation as well as the interaction between types of participation and levels of motivation.

Table XII summarizes the T x L AOV of semester hours accumulated by fifty-eight freshman women during the academic year.

TABLE XII
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF CUMULATIVE
HOURS COMPLETED BY WOMEN AFTER ONE YEAR

Source	Sum of Squares	df	Mean Square	F
Total	1803.62	57		
Type of Participation	18.24	2	9.12	0.30
Level of Motivation	181.08	2	90.54	2.95
Participation x Motivation	98.54	4	24.64	0.80
Error	1505.76	49	30.73	

Tabled value of F for 2/49 df is 3.99 at .05 for two-tailed test.
Tabled value of F for 4/49 df is 2.96 at .05 for two-tailed test.

Examination of this table reveals F ratios which warrant the acceptance of Hypotheses I, II and III. Thus, all mean differences were of statistical nonsignificance.

The aspect of academic success defined as semester hours completed generated three null hypotheses. These hypotheses were tested at the

end of the first semester, second semester and at the conclusion of the academic year. In addition, each analysis was separated for men and women as well as the entire experimental sample. Decisions relative to the hypotheses are summarized as follows:

Hypothesis I: There is no significant difference in the mean number of semester hours completed among Structured, Unstructured and Chance orientation groups.

- A. Accepted for first semester freshmen.
- B. Accepted for first semester men.
- C. Accepted for first semester women.
- D. Accepted for second semester freshmen.
- E. Rejected for second semester men.
 - 1. Men who participate in either Structured or Unstructured orientation groups complete a significantly greater number of second semester hours than do men who participate in Chance orientation.
- F. Accepted for second semester women.
- G. Accepted for freshman sample after one academic year.
- H. Accepted for men in sample after one academic year.
- I. Accepted for women in sample after one academic year.

Hypothesis II: There is no significant mean difference in the number of semester hours completed among groups identified as High, Average or Low in motivation.

- A. Rejected for first semester freshmen.
 - 1. Groups identified as High and Average in motivation complete a significantly greater number of semester

hours during the first semester than the group identified as Low in motivation.

- B. Accepted for first semester men.
- C. Rejected for first semester women.
 - 1. Women assigned to the group identified as High in motivation complete a greater number of first semester hours than women assigned to the group identified as Low in motivation.
- D. Accepted for second semester freshmen.
- E. Accepted for second semester men.
- F. Accepted for second semester women.
- G. Accepted for the experimental sample after one academic year.
- H. Accepted for men in the sample after one academic year.
- I. Accepted for women in the sample after one academic year.

Hypothesis III: There is no significant difference in the mean number of semester hours completed among groups when type of participation (Structured, Unstructured or Chance) and level of motivation (High, Average or Low) were considered as an interaction.

- A. Accepted for first semester freshmen.
- B. Accepted for first semester men.
- C. Accepted for first semester women.
- D. Accepted for second semester freshmen.
- E. Accepted for second semester men.
- F. Accepted for second semester women.

- G. Accepted for the experimental sample after one academic year.
- H. Accepted for the men in the sample after one academic year.
- I. Accepted for the women in the sample after one academic year.

Grade-Point Average

Treatments-By-Levels Analysis of Variance was performed to test the following hypotheses:

Hypothesis IV: There is no significant mean difference in grade-point average among Structured, Unstructured and Chance orientation groups.

Hypothesis V: There is no significant mean difference in grade-point average among groups identified as High, Average or Low in motivation.

Hypothesis VI: There is no significant difference in the mean grade-point average when type of participation and level of motivation are considered as an interaction.

First Semester. Table XIII presents the summary of a T x L AOV of first semester grade-point averages for 137 freshmen.

Examination of Table XIII reveals an F ratio which characterizes only chance differences in GPA of freshmen participating in the three types of orientation. Thus, Hypothesis IV was supported. Hypothesis VI was also supported as an F ratio as low as .50 suggests mean GPA differences which could occur by chance along more often than five times in 100 when type of participation and level of motivation were considered

as an interaction. Hypothesis V was rejected as an F ratio of 14.84 would be expected to occur by chance fewer than one time in 1000. Table XIV presents a summary of the Duncan's Multiple Range Statistic to determine the area of rejection between and/or among the three levels of motivation.

TABLE XIII
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
FIRST SEMESTER GPA OF FRESHMEN

Source	Sum of Squares	df	Mean Square	F
Total	107.31	136		
Type of Participation	0.27	2	0.14	0.20
Level of Motivation	19.88	2	9.94	14.84
Participation x Motivation	1.33	4	0.33	0.50
Error	85.83	128	0.67	

Tabled value of F for 2/128 df is 14.62 at .001 for two-tailed test.
Tabled value of F for 4/128 df is 2.79 at .05 for two-tailed test.

A survey of Table XIV reflects significant mean differences in GPA at all three levels of motivation. Thus, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The group of freshmen identified as High in motivation earn a significantly larger first semester grade-point average than

either the Average or Low in motivation groups. In addition, the group identified as Average in motivation earns a significantly larger first semester grade-point average than the Low in motivation group.

TABLE XIV
DUNCAN'S MULTIPLE RANGE TEST OF FIRST SEMESTER GPA
OF FRESHMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.79	Average 2.26	Low 1.87
High	2.79		0.53 (s)	0.92 (s)
Average	2.26			0.39 (s)
Low	1.87			

Shortest significant range at .05 is $R_2 = 0.33$, $R_3 = 0.34$.

Separate analyses were performed for men and women. Table XV presents a summary of the analysis for first semester GPA for seventy-three freshman men.

Inspection of Table XV results in acceptance of Hypothesis IV since an F ratio of 1.20 reflects only chance mean differences in GPA irrespective of type of orientation. Hypothesis VI was also accepted as an F ratio of .78 suggests statistical equivalence among group GPA's when type of participation and level of motivation were considered as an interaction. An F ratio of 8.23 could be expected by chance alone

fewer than five times in 1000. Thus, Hypothesis V was rejected and this decision necessitated a Duncan's Multiple Range Statistic to determine the area of rejection. A summary of the follow-up test is presented in Table XVI.

TABLE XV
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF FIRST
SEMESTER GPA FOR FRESHMAN MEN

Source	Sum of Squares	df	Mean Square	F
Total	67.21	72		
Type of Participation	1.88	2	0.94	1.20
Level of Motivation	12.86	2	6.43	8.23
Participation x Motivation	2.44	4	0.61	0.78
Error	50.03	64	0.78	

Tabled value of F for 2/64 df is 7.76 at .005 for two-tailed test.
Tabled value of F for 4/64 df is 3.33 at .05 for two-tailed test.

Inspection of Table XVI reveals significant GPA mean differences between the group identified as High in motivation and either Average or Low in motivation groups. However, a mean difference of .42 between the Average and Low in motivation might be expected to occur by chance more than five times in 100. Therefore, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The group of freshman men identified as High in motivation earns significantly larger first semester grade-point average than either of the groups designated as Average or Low in motivation.

TABLE XVI
DUNCAN'S MULTIPLE RANGE TEST OF FIRST SEMESTER GPA
FOR MEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.73	Average 2.07	Low 1.65
High	2.73		0.65 (s)	1.07 (s)
Average	2.07			0.42 (ns)
Low	1.65			

Shortest significant range at .05 is $R_2 = .50$, $R_3 = .53$.

Table XVII presents a T x L AOV of first semester GPA's for sixty-four freshman women.

Examination of Table XVII reveals a nonsignificant F ratio of .85 for the type of participation variable. Thus, Hypothesis IV was accepted. Hypothesis VI was also accepted as an F ratio of 1.50 could be expected to occur by chance more than five times in 100. An F ratio of 5.21 was large enough to attain the established significance level for levels of motivation. Thus, Hypothesis V was rejected and, therefore, required a Duncan's Multiple Range Statistic to determine the

area of rejection. Table XVIII presents a summary of Duncan's Multiple Range Statistic on first semester GPA's for women across the three levels of motivation.

TABLE XVII
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE
OF FIRST SEMESTER GPA OF WOMEN

Source	Sum of Squares	df	Mean Square	F
Total	31.76	63		
Type of Participation	0.74	2	0.37	0.85
Level of Motivation	4.52	2	2.26	5.21
Participation x Motivation	2.62	4	0.65	1.50
Error	23.89	55	0.43	

Tabled value of F for 2/55 df is 3.95 at .05 for two-tailed test.
Tabled value of F for 4/55 df is 3.36 at .05 for two-tailed test.

Examination of Table XVIII reveals significant GPA mean differences between the groups identified as High or Average in motivation and the group designated as Low in motivation. Thus, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The groups of freshman women identified as High or Average in motivation earn significantly larger first semester GPA's than the group identified as Low in Motivation.

TABLE XVIII

DUNCAN'S MULTIPLE RANGE TEST OF FIRST SEMESTER GPA
OF WOMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.83	Average 2.57	Low 2.19
High	2.83		0.26 (ns)	0.64 (s)
Average	2.57			0.37 (s)
Low	2.19			

Shortest significant range at .05 level is $R_2 = 0.36$, $R_3 = 0.39$.

Second Semester. Table XIX presents the summary of a T x L AOV of second semester GPA for 122 freshmen.

Examination of Table XIX reveals only chance mean differences in GPA of freshmen participating in the three types of orientation. Thus, Hypothesis IV was accepted. Hypothesis V was rejected since an F ratio of 13.30 would occur by chance fewer than five times in 1,000. Table XX presents a summary of the Duncan's Multiple Range Statistic to determine the area of rejection between and/or among the three levels of motivation.

A survey of Table XX reflects significant mean differences in GPA at all three levels of motivation. Thus, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The group of freshmen identified as High in motivation earns a significantly larger second semester GPA than either the Average or Low in motivation groups. In addition, the group

identified as Average in motivation earns a significantly larger second semester GPA than the Low in motivation group.

TABLE XIX
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE
OF SECOND SEMESTER GPA OF FRESHMEN

Source	Sum of Squares	df	Mean Square	F
Total	90.00	121		
Type of Participation	1.33	2	0.67	1.06
Level of Motivation	16.75	2	8.38	13.30
Participation x Motivation	0.90	4	0.23	0.37
Error	71.02	113	0.63	

Tabled value of F for 2/113 is 11.97 at .005 for two-tailed test.
Tabled value of F for 4/113 is 3.01 at .05 for two-tailed test.

Hypothesis VI (referring to Table XIX) was supported since an F ratio as low as 0.37 suggests mean differences in GPA were attributable to chance more than five times in 100 when type of participation and level of motivation are considered an interaction.

Separate T x L AOV were performed for men and women. Table XXI presents a summary of the analysis for the sixty-three freshman men.

TABLE XX

DUNCAN'S MULTIPLE RANGE TEST OF SECOND SEMESTER GPA OF
FRESHMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.92	Average 2.40	Low 2.02
High	2.92		0.52 (s)	0.90 (s)
Average	2.40			0.38 (s)
Low	2.02			

Shortest significant range at .05 is $R_2 = 0.34$, $R_3 = 0.35$.

TABLE XXI

TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE
OF SECOND SEMESTER GPA OF MEN

Source	Sum of Squares	df	Mean Squares	F
Total	47.01	62		
Type of Participation	2.67	2	1.34	2.16
Level of Motivation	8.68	2	4.34	6.89
Participation x Motivation	1.51	4	0.38	0.60
Error	34.15	54	0.63	

Tabled value of F for 2/54 df is 6.07 at .01 for two-tailed test.

Tabled value of F for 4/54 df is 3.05 at .05 for two-tailed test.

Inspection of Table XXI results in acceptance of Hypothesis IV since an F ratio of 2.16 reflects only chance mean differences in GPA irrespective of type of participation. Hypothesis VI was also accepted as an F ratio of 0.60 suggested statistical equivalence among group GPA's when type of participation and level of motivation were considered an interaction. An F ratio of 6.89 could be expected by chance fewer than one time in 100. Thus, Hypothesis V was rejected and necessitated a Duncan's Multiple Range Statistic to determine the area of rejection. A summary of this data is presented in Table XXII.

TABLE XXII

DUNCAN'S MULTIPLE RANGE TEST OF SECOND SEMESTER GPA OF MEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.83	Average 2.15	Low 1.90
High	2.83		0.68 (s)	0.93 (s)
Average	2.15			0.25 (ns)
Low	1.90			

Shortest possible significant range at .05 is $R_2 = 0.48$, $R_3 = 0.51$.

Inspection of this table reveals significant GPA mean differences between the group identified as High in motivation and either of the groups identified as Average or Low in motivation. However, a mean GPA

difference of 0.25 between the Average and Low groups might be expected to occur by chance alone more than five times in 100. Therefore, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The group of freshman men identified as High in motivation earns a significantly larger second semester GPA than either of the groups designated as Average or Low in motivation.

Table XXIII presents the T x L AOV of second semester GPA for the fifty-nine freshman women.

TABLE XXIII
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE
OF SECOND SEMESTER GPA OF WOMEN

Source	Sum of Squares	df	Mean Square	F
Total	36.47	58		
Type of Participation	0.23	2	0.12	0.22
Level of Motivation	6.49	2	3.25	6.02
Participation x Motivation	3.00	4	0.75	1.39
Error	26.75	50	0.54	

Tabled value of F for 2/50 df is 3.99 at .05 for two-tailed test.
Tabled value of F for 4/50 df is 3.07 at .05 for two-tailed test.

Examination of this data suggests only chance mean GPA differences among the Structured, Unstructured and Chance orientation groups. Thus,

Hypothesis IV was supported. Hypothesis VI was also supported as an F ratio of 1.39 could be expected to occur by chance alone more than five times in 100. An F ratio of 6.02 could be expected to occur by chance fewer than five times in 100. Thus, Hypothesis V was rejected, requiring a follow-up test to determine the area of rejection. Table XXIV presents a summary of the Duncan's Multiple Range Statistic on second semester GPA for freshman women across three motivation levels.

TABLE XXIV
DUNCAN'S MULTIPLE RANGE TEST OF SECOND SEMESTER GPA OF
WOMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.95	Average 2.79	Low 2.18
High	2.98		0.19 (ns)	0.80 (s)
Average	2.79			0.61 (s)
Low	2.18			

Shortest significant range at .05 is $R_2 = 0.48$, $R_3 = 0.51$.

Examination of Table XXIV reveals significant GPA mean differences between the groups identified as High or Average in motivation and the group designated as Low in motivation. Thus, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The groups of freshman women identified as High or Average in motivation earn significantly larger first semester GPA's than the group of women identified as Low in motivation.

Academic Year. Table XXV presents a summary of T x L AOV of cumulative GPA for 121 freshmen.

TABLE XXV
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF CUMULATIVE
GPA OF FRESHMEN AFTER ONE ACADEMIC YEAR

Source	Sum of Squares	df	Mean Square	F
Total	67.33	120		
Type of Participation	0.50	2	0.25	0.52
Level of Motivation	12.73	2	6.36	13.25
Participation x Motivation	0.23	4	0.06	0.13
Error	53.87	112	0.48	

Tabled value of F for 2/112 df is 8.66 at .001 for two-tailed test.
Tabled value of F for 4/112 df is 2.91 at .05 for two-tailed test.

Examination of Table XXV reveals only chance mean differences in GPA of freshmen participating in the three types of orientation. Thus, Hypothesis IV was accepted. Hypothesis VI was also accepted as an F ratio of 0.13 indicates statistical equivalence among group GPA's when type of participation and level of motivation were considered an

interaction. An F ratio of 13.25 could be expected by chance alone fewer than one time in 100. Therefore, Hypothesis V was rejected and, thus, necessitated a Duncan's Multiple Range Statistic to determine the area of rejection. A summary of that data is presented in Table XXVI.

TABLE XXVI
DUNCAN'S MULTIPLE RANGE TEST OF CUMULATIVE GPA
OF FRESHMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.86	Average 2.39	Low 2.06
High	2.86		0.47 (s)	0.80 (s)
Average	2.39			0.33 (s)
Low	2.06			

Shortest significant range at .05 is $R_2 = 0.31$, $R_3 = 0.32$.

A survey of this table reflects significant mean differences in cumulative GPA's at all three levels of motivation. Thus, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The group of freshmen identified as High in motivation earns a significantly larger cumulative GPA than either the Average or Low in motivation groups. In addition, the group identified as Average in motivation earns a significantly larger cumulative GPA than the Low in motivation group.

Separate T x L AOV were performed for men and women. Table XXVII presents a summary of the analysis for sixty-three freshman men.

TABLE XXVII
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF CUMULATIVE
GPA OF MEN AFTER ONE ACADEMIC YEAR

Source	Sum of Squares	df	Mean Square	F
Total	38.36	62		
Type of Participation	2.05	2	1.03	1.94
Level of Motivation	6.83	2	3.41	6.43
Participation x Motivation	0.89	4	0.22	0.42
Error	28.59	54	0.53	

Tabled value of F for 2/54 df is 6.07 at .01 for two-tailed test.
Tabled value of F for 4/54 df is 3.05 at .05 for two-tailed test.

Inspection of Table XXVII results in acceptance of Hypothesis IV since an F ratio of 1.94 reflects no more than chance mean differences in GPA irrespective of type of participation. Hypothesis VI was also supported as an F ratio of 0.42 suggests statistical equivalence among group cumulative GPA's when type of participation and level of motivation were considered as an interaction. An F ratio of 6.43 could be expected to occur by chance alone fewer than one time in 100. Thus, Hypothesis V was rejected and necessitated a Duncan's Multiple Range

Statistic to determine the area of rejection. A summary of this data is presented in Table XXVIII.

TABLE XXVIII
DUNCAN'S MULTIPLE RANGE TEST OF CUMULATIVE GPA
OF MEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.78	Average 2.18	Low 1.96
High	2.78		0.60 (s)	0.82 (s)
Average	2.18			0.22 (ns)
Low	1.96			

Shortest significant range at .05 is $R_2 = 0.45$, $R_3 = 0.48$.

Inspection of this table reveals significant GPA mean differences between the groups identified as High in motivation and either group designated as Average or Low in motivation. However, a mean GPA difference of 0.22 between the Average and Low groups may be expected to occur by chance alone more than five times in 100. Therefore, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The group of freshman men identified as High in motivation earns a significantly larger cumulative GPA than either of the groups designated as Average or Low in motivation.

Table XXIX presents the T x L AOV of cumulative GPA's for fifty-eight freshman women.

TABLE XXIX
TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF CUMULATIVE GPA
OF WOMEN AFTER ONE ACADEMIC YEAR

Source	Sum of Squares	df	Mean Square	F
Total	24.03	57		
Type of Participation	0.23	2	0.11	0.31
Level of Motivation	4.42	2	2.21	6.31
Participation x Motivation	2.01	4	0.50	1.43
Error	17.37	49	0.35	

Tabled value of F for 2/49 is 6.07 at .01 for two-tailed test.
Tabled value of F for 4/49 is 3.08 at .05 for two-tailed test.

Examination of Table XXIX suggests only chance mean GPA differences among the Structured, Unstructured and Chance orientation groups. Thus, Hypothesis IV was accepted. Hypothesis VI was also supported as an F ratio of 1.43 could be expected to occur by chance more than five times in 100. An F ratio of 6.31 could be expected to occur by chance alone fewer than one time in 100. Thus, Hypothesis V was rejected, requiring a follow-up test to determine the area of rejection. Table XXX presents a summary of Duncan's Multiple Range Statistic on cumulative GPA's for women across three levels of motivation.

Examination of Table XXX reveals significant cumulative GPA mean differences between the groups identified as High or Average and the group designated as Low in motivation. Thus, a true alternate hypothesis to replace the false null (Hypothesis V) was:

The groups of freshman women identified as High or Average in motivation earn significantly larger cumulative GPA's than the group identified as Low in motivation.

TABLE XXX
DUNCAN'S MULTIPLE RANGE TEST OF CUMULATIVE GPA
OF WOMEN ACROSS THREE LEVELS OF MOTIVATION

	Means	High 2.91	Average 2.71	Low 2.22
High	2.91		0.20 (ns)	0.69 (s)
Average	2.71			0.49 (s)
Low	2.22			

Shortest significant range at .05 is $R_2 = 0.40$, $R_3 = 0.42$.

The aspect of academic success defined as grade point average generated three null hypotheses. These hypotheses were tested at the end of the first semester, the second semester, and at the conclusion of the freshman year. In addition, the analysis was separated for men and women. Decisions relative to these hypotheses are summarized as follows:

Hypothesis IV: There is no significant mean difference in grade-point average among Structured, Unstructured and Chance orientation groups.

- A. Accepted for first semester freshmen.
- B. Accepted for first semester men.
- C. Accepted for first semester women.
- D. Accepted for second semester freshmen.
- E. Accepted for second semester men.
- F. Accepted for second semester women.
- G. Accepted for entire sample after one academic year.
- H. Accepted for men in sample after one academic year.
- I. Accepted for women in sample after one academic year.

Hypothesis V: There is no significant mean difference in GPA among groups identified as High, Average or Low in motivation.

- A. Rejected for first semester freshmen.
 - 1. Students identified as High in motivation earn a significantly larger first semester GPA's than either the Average or Low in motivation. In addition, students identified as Average in motivation earn higher GPA's than the Low in motivation.
- B. Rejected for first semester men.
 - 1. Freshman men identified as High in motivation earn larger first semester GPA's than either of the groups designated as Average or Low in motivation.
- C. Rejected for first semester women.
 - 1. Freshman women identified as High or Average in motivation earn larger first semester GPA's than the group identified as Low in motivation.
- D. Rejected for second semester freshmen.

1. Students identified as High in motivation earn higher second semester GPA's than either the Average or Low in motivation groups. In addition, students identified as Average in motivation earn higher second semester GPA's than students designated as Low in motivation.
- E. Rejected for second semester men.
1. Freshman men identified as High in motivation earn larger second semester GPA's than men designated as either Average or Low in motivation.
- F. Rejected for second semester women.
1. Freshman women identified as High or Average in motivation earn larger GPA's than women designated as Low in motivation.
- G. Rejected for entire sample after one academic year.
1. Freshman students identified as High in motivation earn larger academic year GPA's than either the Average or Low in motivation. In addition, those students identified as Average in motivation earn larger GPA's than those designated as Low in motivation.
- H. Rejected for men in sample after one academic year.
1. Freshman men identified as High in motivation earn larger GPA's than either the Average or Low in motivation.
- I. Rejected for women in sample after one academic year.
1. Freshman women identified as High or Average in motivation earn larger GPA's than those designated as Low in motivation.

Hypothesis VI: There is no significant difference in the mean GPA when type of participation and level of motivation are considered as an interaction.

- A. Accepted for first semester freshmen.
- B. Accepted for first semester men.
- C. Accepted for first semester women.
- D. Accepted for second semester freshmen.
- E. Accepted for second semester men.
- F. Accepted for second semester women.
- G. Accepted for freshmen in sample after one academic year.
- H. Accepted for men in sample after one academic year.
- I. Accepted for women in sample after one academic year.

Part II

Part II of the analysis was devoted to testing a triad of independent variables as well as first and second order interactions. Two of these variables, type of participation and level of motivation, were exclusively used in Part I of the analysis. Since class size was inappropriate for Chance Orientation, the data was re-evaluated primarily for the purpose of testing the main effect of class size and interactive effects of all experimental treatments in Psychology 100.

Academic success was defined as semester hours completed and grade-point average, therefore, these dependent variables were discussed separately and in terms of first semester, second semester, and academic year. The Treatments-By-Treatments-By-Levels analysis would not permit a separation of the data by sex as some of the cell frequencies would have fallen below a minimum level of 4.

Semester Hours Completed

A Treatments-By-Treatments-By-Levels (T x T x L) Analysis of Variance (AOV) was performed to test the following hypotheses:

Hypothesis VII: There is no significant difference in the mean number of semester hours completed between Large and Small Orientation groups.

Hypothesis VIII: There is no significant difference in the mean number of semester hours completed when type of participation (Structured or Unstructured) and size of class (Large or Small) are considered as an interaction.

Hypothesis IX: There is no significant difference in the mean number of semester hours completed when size of class and level of motivation are considered as an interaction.

Hypothesis X: There is no significant difference in the mean number of semester hours completed when type of participation, size of class and level of motivation are considered as an interaction.

First Semester. Table XXXI presents a T x T x L AOV of the number of semester hours completed by ninety-one first semester freshmen after participation in either Structured or Unstructured orientation groups.

Inspection of Table XXXI reveals only chance mean differences in semester hours completed between Large and Small groups. Thus, Hypothesis VII was accepted. Hypotheses VIII, IX and X were also confirmed since F ratios of .09 (type of participation and class size interaction), .66 (size and motivation level interaction) and 1.47 (type of participation, size of class and level of motivation interaction) could all be expected to occur by chance only more often than

five times in 100. The only F ratio which reached the critical point of significance measured the level of motivation variable. This was consistent with the results shown in Table I. Thus, the rejection of Hypothesis II was reconfirmed.

TABLE XXXI
TREATMENTS-BY-TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
FIRST SEMESTER HOURS COMPLETED BY FRESHMEN

Source	Sum of Squares	df	Mean Square	F
Total	1645.83	90		
Type of Participation	15.78	1	15.78	0.95
Size of Class	0.40	1	0.40	0.02
Level of Motivation	217.93	1	108.97	6.57
Participation x Size	1.57	1	1.57	0.09
Participation x Level of Motivation	30.36	2	15.18	0.92
Size x Level of Motivation	22.05	2	11.03	0.66
Participation x Size x Level of Motivation	48.70	2	24.35	1.47
Error	1310.04	79	16.58	

Tabled value of F for 1/79 df is 5.25 at .05 for two-tailed test.
Tabled value of F for 2/79 df is 3.88 at .05 for two-tailed test.

Second Semester. Table XXXII presents the T x T x L AOV of second semester hours completed by eighty-one freshmen.

TABLE XXXII
TREATMENTS-BY-TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
SECOND SEMESTER HOURS COMPLETED BY FRESHMEN

Source	Sum of Squares	df	Mean Square	F
Total	933.65	80		
Type of Participation	6.56	1	6.56	0.58
Size of Class	5.80	1	5.80	0.52
Level of Motivation	68.65	2	34.33	3.06
Participation x Size	29.61	1	29.61	2.64
Participation x Level of Motivation	1.67	2	0.84	0.07
Size x Level of Motivation	6.85	2	3.43	0.31
Participation x Size x Level of Motivation	40.58	2	20.29	1.81
Error	773.93	69	11.22	

Tabled value of F for 1/69 is 5.27 at .05 for two-tailed test.
Tabled value of F for 2/69 is 3.91 at .05 for two-tailed test.

Inspection of Table XXXII indicates only chance mean differences in second semester hours completed between the Large and Small groups. Thus, Hypothesis VII was accepted. Hypotheses VIII, IX and X were also

supported since F ratios of 2.64 (type of participation and class size interaction), .31 (size and motivation level interaction, and 1.81 (type of participation, class size and level of motivation) could be expected to occur by chance only more than five times in 100.

Academic Year. Table XXXIII presents the T x T x L AOV of semester hours completed by eighty-one subjects during the freshman year.

TABLE XXXIII
TREATMENTS-BY-TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
CUMULATIVE SEMESTER HOURS COMPLETED BY FRESHMEN AT THE
CONCLUSION OF ONE ACADEMIC YEAR

Source	Sum of Squares	df	Mean Square	F
Total	5574.22	80		
Type of Participation	0.07	1	0.07	0.00
Size of Class	0.42	1	0.42	0.01
Level of Motivation	238.03	2	119.02	1.59
Participation x Size	44.58	1	44.58	0.60
Participation x Level of Motivation	17.38	2	8.69	0.12
Size x Level of Motivation	76.63	2	38.32	0.51
Participation x Size x Level of Motivation	35.61	2	17.81	0.24
Error	5161.50	69	74.79	

Tabled value of F for 1/69 is 5.27 at .05 for two-tailed test.
Tabled value of F for 2/69 is 3.91 at .05 for two-tailed test.

Examination of Table XXXIII indicates only chance mean differences in cumulative semester hours completed between Large and Small groups. Thus, Hypothesis VII was accepted. Hypotheses VIII, IX and X were also confirmed, since F ratios of less than 1.0 always designate only chance differences. Thus, neither first nor second order interactions were significant.

The aspect of academic success defined as semester hours completed generated four null hypotheses. These hypotheses were tested at the end of the first semester, the second semester and at the conclusion of the freshman year. Decisions relative to the null hypotheses are as follows:

Hypothesis VII: There is no significant difference in the mean number of semester hours completed between Large and Small Orientation groups.

- A. Accepted for first semester freshmen.
- B. Accepted for second semester freshmen.
- C. Accepted for freshmen after one academic year.

Hypothesis VIII: There is no significant difference in the mean number of semester hours completed when type of participation (Structured or Unstructured) and size of class (Large or Small) are considered as an interaction.

- A. Accepted for first semester freshmen.
- B. Accepted for second semester freshmen.
- C. Accepted for freshmen after one academic year.

Hypothesis IX: There is no significant difference in the mean number of semester hours completed when size of class and level of motivation are considered as an interaction.

- A. Accepted for first semester freshmen.
- B. Accepted for second semester freshmen.
- C. Accepted for freshmen after one academic year.

Hypothesis X: There is no significant difference in the mean number of semester hours completed when type of participation, size of class and level of motivation are considered as an interaction.

- A. Accepted for first semester freshmen.
- B. Accepted for second semester freshmen.
- C. Accepted for freshmen after one academic year.

Grade-Point Average

Treatments-By-Treatments-By-Levels Analysis of Variance was performed to test the following hypotheses:

Hypothesis XI: There is no significant mean difference in GPA between Large and Small orientation groups.

Hypothesis XII: There is no significant mean difference in GPA when type of participation (Structured or Unstructured) and size of class (Large or Small) are considered as an interaction.

Hypothesis XIII: There is no significant mean difference in GPA when size of class (Large or Small) and level of motivation (High, Average or Low) are considered as an interaction.

Hypothesis XIV: There is no significant mean difference in GPA when type of participation, size of class, and level of motivation are considered as an interaction.

First Semester. Table XXXIV presents a summary of a T x T x L AOV of first semester GPA for ninety-one freshmen after participation in a Structured or Unstructured Orientation.

TABLE XXXIV
TREATMENTS-BY-TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
FIRST SEMESTER GPA OF FRESHMEN

Source	Sum of Squares	df	Mean Square	F
Total	72.50	90		
Type of Participation	0.19	1	0.19	0.28
Size of Class	0.32	1	0.32	0.49
Level of Motivation	15.59	2	7.80	11.79
Participation x Size	0.24	1	0.24	0.37
Participation x Level of Motivation	0.62	2	0.31	0.47
Size x Level of Motivation	2.22	2	1.11	1.68
Participation x Size x Level of Motivation	1.04	2	0.52	0.78
Error	52.28	79	0.66	

Tabled value of F for 1/79 is 5.25 at .05 for two-tailed test.
Tabled value of F for 2/79 is 3.88 at .05 for two-tailed test.

Inspection of Table XXXIV reveals only chance mean differences in GPA between Large and Small groups. Thus, Hypothesis XI was accepted. Hypotheses XII, XIII and XIV were also confirmed since F ratios of 0.37

(type of participation and size of class interaction), 1.68 (size of class and level of motivation interaction), and 0.78 (type of participation, size of class and level of motivation) could be expected to occur by chance only more often than five times in 100. The only F ratio which reached the critical point of significance measured the level of motivation variable. This was consistent with results shown in Table XIII. Thus, the rejection of Hypothesis V was reconfirmed.

Second Semester. Table XXXV presents the T x T x L AOV of second semester GPA earned by eighty-one freshmen after completion of a Structured or Unstructured Orientation.

Examination of Table XXV reveals only chance mean differences in second semester GPA for all main effects (except the levels of motivation variable) and all interactions. Thus, Hypothesis XI, XII, XIII and XIV were accepted. An F ratio of 13.18 for the level of motivation variable confirmed the results shown in Table XIX. Thus, the rejection of Hypothesis V was reconfirmed.

Academic Year. Table XXXVI presents the T x T x L AOV of cumulative GPA's for eighty-one freshmen after completion of a Structured or Unstructured Orientation.

Inspection of Table XXXVI reflects only chance mean differences on cumulative GPA's for all main effects (except levels of motivation variable) and all interactions. Thus, Hypothesis XI, XII, XIII and XIV were confirmed. An F ratio of 12.48 for the level of motivation variable confirmed the results shown in Table XXV. Thus, the rejection of Hypothesis V was reconfirmed.

TABLE XXXV
TREATMENTS-BY-TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE
OF SECOND SEMESTER GPA OF FRESHMEN

Source	Sum of Squares	df	Mean Square	F
Total	51.06	80		
Type of Participation	0.12	1	0.12	0.24
Size of Class	0.05	1	0.05	0.10
Level of Motivation	13.43	2	6.72	13.18
Participation x Size	0.01	1	0.01	0.02
Participation x Level of Motivation	0.17	2	0.09	0.18
Size x Level of Motivation	0.77	2	0.39	0.76
Participation x Size x Level of Motivation	1.03	2	0.52	1.02
Error	35.49	69	0.51	

Tabled value of F for 1/69 is 5.27 at .05 for two-tailed test.
Tabled value of F for 2/69 is 3.91 at .05 for two-tailed test.

This portion of the investigation of academic success viewed grade-point average and generated four null hypotheses. These hypotheses were tested at the end of the first and second semesters as well as at the end of the academic year. Decisions relative to the null hypotheses are as follows:

Hypothesis XI: There is no significant mean difference in grade-point average between Large and Small orientation groups.

TABLE XXXVI
TREATMENTS-BY-TREATMENTS-BY-LEVELS ANALYSIS OF VARIANCE OF
CUMULATIVE GPA OF FRESHMEN AFTER ONE ACADEMIC YEAR

Source	Sum of Squares	df	Mean Square	F
Total	39.79	80		
Type of Participation	0.06	1	0.66	0.15
Size of Class	0.18	1	0.18	0.45
Level of Motivation	9.97	2	4.99	12.48
Participation x Size	0.00	1	0.00	0.00
Participation x Level of Motivation	0.07	2	0.03	0.08
Size x Level of of Motivation	1.66	2	0.58	1.45
Participation x Size x Level of Motivation	0.13	2	0.07	0.18
Error	27.72	69	0.40	

Tabled value of F for 1/69 is 5.27 at .05 for two-tailed test.
Tabled value of F for 2/69 is 3.91 at .05 for two-tailed test.

- A. Accepted for first semester.
- B. Accepted for second semester.
- C. Accepted for academic year.

Hypothesis XII: There is no significant mean difference in grade-point average when type of participation and size of class are considered an interaction.

- A. Accepted for first semester.
- B. Accepted for second semester.
- C. Accepted for academic year.

Hypothesis XIII: There is no significant mean difference in the grade-point average when class size and level of motivation are considered as an interaction.

- A. Accepted for first semester.
- B. Accepted for second semester.
- C. Accepted for academic year.

Hypothesis XIV: There is no significant mean difference in the grade-point average when type of participation, class size and level of motivation are considered as an interaction.

- A. Accepted for first semester.
- B. Accepted for second semester.
- C. Accepted for academic year.

Part III

Part III of the analysis was designed to study the relationship between a persistence-withdrawal dichotomy and participation in one of the three types of orientation. In separate analyses the dichotomy was analyzed in view of class size and level of motivation. Chi-Square was

used as the vehicle for analysis as the data were separated for the first semester and the academic year.

Persistence-Withdrawal Dichotomy

A Chi-Square technique was performed to test the following hypotheses:

Hypothesis XV: There is no significant relationship between type of participation and the persistence-withdrawal dichotomy.

Hypothesis XVI: There is no significant relationship between size of class and the persistence-withdrawal dichotomy.

Hypothesis XVII: There is no significant relationship between levels of motivation and the persistence-withdrawal dichotomy.

First Semester. Table XXXVII presents a frequency table of the persistence-withdrawal dichotomy across the three types of participation.

TABLE XXXVII
CHI-SQUARE FREQUENCY TABLE OF FIRST SEMESTER
PERSISTENCE-WITHDRAWAL DICHOTOMY ACROSS
THREE TYPES OF PARTICIPATION

	Structured	Unstructured	Chance	Total
Persistence	44	47	46	137
Withdrawal	4	1	2	7
Total	48	48	48	144
χ^2 is 2.07				

Tabled value of χ^2 for 2 df at .05 is 6.00.

Inspection of Table XXXVII reveals a distribution of withdrawals across the three types of participation which could be attributed to chance more than five times in 100. Thus, Hypothesis XV was supported.

Table XXXVIII presents a frequency table for the persistence-withdrawal dichotomy across the two class sizes.

TABLE XXXVIII
CHI-SQUARE FREQUENCY TABLE OF FIRST SEMESTER PERSISTENCE-
WITHDRAWAL DICHOTOMY ACROSS CLASS SIZES

	Large	Small	Total
Persistence	46	45	91
Withdrawal	2	3	5
Total	48	48	96
$X^2 = .15$			

Tabled value of X^2 for 1 df at .05 is 3.8.

Examination of Table XXXVIII suggests that the five freshmen who withdrew during the first semester were as equally distributed as possible across the class sizes. Therefore, Hypothesis XVI was accepted for the first semester.

Table XXXIX presents a frequency table of the persistence-withdrawal dichotomy across the three motivation levels.

TABLE XXXIX

CHI-SQUARE FREQUENCY TABLE OF FIRST SEMESTER PERSISTENCE-
WITHDRAWAL DICHOTOMY ACROSS THREE LEVELS OF MOTIVATION

	High	Average	Low	Total
Persistence	48	44	45	137
Withdrawal	0	4	3	7
Total	48	48	48	144

X^2 with High and Average cells combined = .36.

Tabled value of X^2 at 1 df is 3.8.

Table XXXIX suggests an unequal distribution of the seven withdrawals in the direction of the Average and Low groups. However, since one of the assumptions of Chi-Square is a cell frequency of at least one, the High and Average cells were combined (Snedecor and Cochran, 1967). The resulting X^2 value of .36 suggested that this distribution could be expected to occur by chance alone more often than five times in 100. Thus, Hypothesis XVII was supported.

Academic Year. Table XL presents a frequency table of the persistence-withdrawal dichotomy across the three types of participation. This table includes freshmen who withdrew at any point during the investigation.

This table indicates that the twenty-three freshmen who withdrew during the investigation were distributed across the Structured, Unstructured and Chance groups in a manner which could be expected by

chance more often than five times in 100. Thus, Hypothesis XV was accepted.

TABLE XL
CHI-SQUARE FREQUENCY TABLE OF ACADEMIC YEAR PERSISTENCE-
WITHDRAWAL ACROSS THREE TYPES OF PARTICIPATION

	Structured	Unstructured	Chance	Total
Persistence	39	42	40	121
Withdrawal	9	6	8	23
Total	48	48	48	144
$\chi^2 = .70$				

Tabled value of χ^2 for 1 df at .05 is 6.00

Table XLI presents a frequency table representing the persistence-withdrawal dichotomy across the class size variable.

Examination of Table XLI suggests that the fifteen freshmen who withdrew during the investigation were as equally distributed as possible. Thus, Hypothesis XVI was supported for the academic year.

Table XLII presents a frequency table of the academic year persistence-withdrawal dichotomy across the three motivation levels.

This table suggests an unequal distribution of withdrawals large enough to create an χ^2 value of 9.77. A value as high as this could be expected to occur by chance alone fewer than one time in 100. Thus,

TABLE XLI
 CHI-SQUARE FREQUENCY TABLE OF ACADEMIC YEAR PERSISTENCE-
 WITHDRAWAL DICHOTOMY ACROSS CLASS SIZE

	Size of Class		Total
	Large	Small	
Persistence	41	40	81
Withdrawal	7	8	15
Total	48	48	96
$\chi^2 = .04$			

Tabled value of χ^2 for 1 df is 3.8 at .05.

TABLE XLII
 CHI-SQUARE FREQUENCY TABLE OF ACADEMIC YEAR PERSISTENCE-
 WITHDRAWAL DICHOTOMY ACROSS THREE LEVELS OF MOTIVATION

	Level of Motivation			Total
	High	Average	Low	
Persistence	46	42	35	121
Withdrawal	2	6	13	23
Total	48	48	48	144
$\chi^2 = 9.77$				

Tabled value of χ^2 at 2 df is 9.2 at .01.

Hypothesis XVII was rejected. A test for significance of difference between two proportions was performed to determine the significance of the proportioned difference among the motivation levels. Table XLIII presents a summary of the data.

TABLE XLIII
SUMMARY OF TESTS OF SIGNIFICANT DIFFERENCE
BETWEEN TWO PROPORTIONS

	Proportions	High 2/48=0.042	Average 6/48=0.125	Low 13/48=0.271	z
High	2/48=0.042			.237	3.22 (s)
Average	6/48=0.125	1.49		.307	2.62 (s)
Low	13/48=0.271				1.80 (ns)

z of ± 1.96 is significant at .05 level for two-tailed test.

z of ± 2.50 is significant at .01 level for two-tailed test.

Survey of this table indicates that the proportional differences between the High and Average withdrawals could be expected by chance more often than five times in 100. However, both the High and Average proportions were significantly lower than the Low proportion. Thus, a true alternate hypothesis to replace the false null (Hypothesis XVII) was:

Those freshmen identified as High or Average in motivation

withdrew proportionately less often than those identified as Low in motivation.

A summary of the decisions relative to the hypotheses generated by the question concerning the impact of Psychology 100 on attrition is as follows:

Hypothesis XV: There is no significant relationship between types of participation and the persistence-withdrawal dichotomy.

A. Accepted for the first semester.

B. Accepted for the academic year.

Hypothesis XVI: There is no significant relationship between size of class and the persistence-withdrawal dichotomy.

A. Accepted for the first semester.

B. Accepted for the academic year.

Hypothesis XVII: There is no significant relationship between levels of motivation and the persistence-withdrawal dichotomy.

A. Accepted for the first semester.

B. Rejected for the academic year.

1. Freshmen identified as High or Average in motivation withdraw proportionately less often than freshmen identified as Low in motivation.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

General Summary of the Investigation

The purpose of the present study was to investigate experimentally the effectiveness of freshman orientation at Missouri Southern College. In addition, experimental variations (unstructured methodology and small groups) in the course were studied in terms of their probable impact on academic success during the freshman year. General research questions investigated were:

1. Does freshman orientation (Psychology 100) contribute to academic success during the freshman year?
2. Is academic success affected by three distinct levels of student motivation?
3. Is academic success affected by an unstructured method of presentation?
4. Is academic success affected by reducing orientation class size to groups of twenty-four?
5. Is freshman attrition affected by orientation?

Subjects for the investigation included 144 subjects randomly selected after the freshman population had been stratified according to motivation level. This sample was divided into three groups: those who participated in a structured orientation, those who participated in an

unstructured orientation, and those who experienced chance orientation. Each of the three groups was composed of an equal number of students identified as high in motivation, average in motivation or low in motivation. In addition, the structured and unstructured groups were subdivided into small sections (twenty-four) and large sections (ninety or more).

One instrument was used to measure the organismic variable under investigation. This was the Achiever Personality Scale of the Opinion, Attitude, and Interest Survey. The freshman class was stratified into high, average and low motivation levels based on a percentile score yielded by this instrument.

Two measures of academic success were semester hours completed and grade point average. These measures were collected from official student records for the first and second semesters. Cumulative totals for the academic year were also secured from the Registrar at Missouri Southern College. Attrition data were provided at the end of each semester by the Student Personnel Office at Missouri Southern College.

Results and Conclusions

The question related to the contribution of Psychology 100 to academic success was approached directly by Hypotheses I and IV. These two hypotheses were analyzed with a Treatments-By-Levels Analysis of Variance in terms of semesters and an academic year. In addition, each analysis was separated by sex. Hypothesis I was accepted in eight of the nine analyses. The lone rejection resulted in the development of an alternate hypothesis which stated:

Men who participate in either Structured or Unstructured orientation groups complete a significantly greater number of second semester hours.

The alternate hypothesis must be viewed with considerable caution. Two of the twenty-two men who experienced Chance orientation earned zero second semester hours while none of the fifty-six Psychology 100 participants earned fewer than six second semester hours. The two men might be characterized as "unofficial" withdrawals as the zero hours earned simply reflected failure to "officially withdraw" before the established deadline. Had these two men officially withdrawn, the differences between Psychology 100 group means and the Chance orientation mean would have shortened to a position well below the critical point of rejection. This fact does not imply an absence of treatment effect since it may be reasonable to assume that Psychology 100 participants were better informed in terms of official withdrawal procedures and the unfortunate impact of an unofficial withdrawal. However, it was just as reasonable to expect a true treatment effect to remain consistent across the several analyses.

Hypothesis IV was accepted in all nine analyses suggesting that GPA remained unaffected by participation in freshman orientation across all students, both semesters and for the academic year. Therefore, it was concluded with considerable confidence that participation in either the Structured or Unstructured type of orientation was neither "help nor hinder" in the pursuit of academic success. This conclusion was quite consistent with the Gerber (1970) and Warren (1970) studies previously cited.

Fricke's (1965) contention that academic motivation was not only measurable but significantly related to academic success provided the back drop for the research question related to the contribution of three distinct levels of motivation. Two hypotheses were generated to directly approach the question. Hypotheses II and V were analyzed in terms of semesters as well as the academic year. In addition, each analysis was separated for men and women. Hypothesis II was accepted in seven of the nine analyses. The rejections resulted in the development of two alternate hypotheses. These were:

1. Groups identified as High and Average in motivation complete a significantly greater number of first semester hours than the group identified as Low in motivation.
2. Women identified as High in motivation complete a significantly greater number of first semester hours than women identified as Low in motivation.

The AP scale, as reflected in the motivation levels, was a significant discriminator in terms of the High and Low levels for women while its ability to discriminate between groups of men only reflected a tendency. In other words, the mean differences among groups of men were mathematically real (High $\bar{X} = 13.63$, Average $\bar{X} = 12.88$, Low $\bar{X} = 10.96$) but statistically nonsignificant. In any case, the combination of statistical differences among women and the mathematical difference among men manifested itself as a statistical difference for all students at the High-Average versus Low motivation levels. This fact in conjunction with the lack of statistical significance in the other analyses suggested that the organismic variable was only effective for women and then only inconsistently.

The level of motivation variable proved to be amazingly consistent when Hypothesis V was tested. Table XLIV demonstrates the consistent relationship among motivation levels as reflected by differences in GPA at the end of the first and second semesters as well as the academic year.

TABLE XLIV
RELATIONSHIP AMONG LEVELS OF MOTIVATION AS
REFLECTED BY MEAN DIFFERENCES IN GPA

	Mean Difference in GPA for Men	Mean Difference in GPA for Women	Mean Difference in GPA for Freshmen
First Semester	H < A (0.65)	H = A (0.26)	H < A (0.53)
	H < L (1.07)	H < L (0.64)	H < L (0.92)
	A = L (0.42)	A < L (0.37)	A < L (0.40)
Second Semester	H < A (0.68)	H = A (0.19)	H < A (0.52)
	H < L (0.93)	H < L (0.80)	H < L (0.90)
	A = L (0.25)	A < L (0.61)	A < L (0.38)
Academic Year	H < A (0.60)	H = A (0.20)	H < A (0.47)
	H < L (0.82)	H < L (0.69)	H < L (0.80)
	A = L (0.22)	A < L (0.49)	A < L (0.33)

Inspection of the table suggests that men identified as High in motivation consistently earn larger GPA's than either the Average or Low in motivation. Women, in contrast, identified as either High or Average in motivation earn larger GPA's than those identified as Low in motivation. When these data were combined, significant mean differences existed between all levels of motivation. Therefore, it must be suggested that the Achiever Personality Scale was not only an effective measure of motivation for freshmen, in general, but consistently detected motivational differences in men and women. It was, therefore, concluded that the levels of motivation were not only distinct but significantly related to academic success as measured by GPA. Although this conclusion seemed to support Fricke's contention, it could not be generalized to consistently include number of hours completed.

Hypotheses III and VI were generated specifically to test the possibility of an interactive effect between type of orientation and levels of motivation. The possible interaction was tested for both semesters and an academic year. In addition, each analysis was separated by sex. However, all analyses reflected only chance differences when tested at the .05 level. Therefore, it was concluded that Psychology 100 (Structured or Unstructured) had neither a direct nor an interactive effect on academic success.

Research questions related to the impact of proposed changes in Psychology 100 were analyzed in a Treatments-By-Treatments-By-Levels Analysis of Variance which tested seven additional hypotheses. The relative merits of an Unstructured methodology across three levels of motivation had been well established in the previous analysis but type of participation and level of motivation were re-evaluated in order to

test the possibility of interactive effects with class size. These several hypotheses were tested at the end of the first semester, second semester and at the end of the academic year. Unfortunately, Hypotheses VII, VIII, IX, X, XI, XII, XIII and XIV were accepted in all analyses. The only significant findings were with the levels of motivation variable which had already been studied. It was shown that proposed changes in Psychology 100 (an unstructured methodology and small class size) had neither main effects nor interactive effects on semester hours completed or GPA. Therefore, it was concluded that these proposed changes in freshman orientation were ill-advised as they had no significant effect on academic success.

The final question which this study was designed to answer dealt with the effect of Psychology 100 on attrition. A Chi-Square statistic was utilized in the several analyses of a persistence-withdrawal dichotomy. Three hypotheses were generated and tested at the end of one semester and again at the end of one year. Hypothesis XV was accepted for one semester and one year suggesting that withdrawals were equally distributed among the Structured, Unstructured and Chance orientation groups. Thus, it was concluded that type of participation had no significant effect on attrition.

Hypothesis XVI was accepted for one semester and one year reflecting an equal distribution of withdrawals across Large and Small groups. Therefore, it was concluded that size of class had no significant effect on attrition.

Hypothesis XVII was accepted for the first semester but rejected after one year. The rejection resulted in the following alternate

hypothesis after a test for significance between two proportions had been computed:

Those students identified as High or Average in motivation withdraw proportionately less often than those students identified as Low in motivation.

Thus, it was shown that the AP scale as reflected in the motivation levels was a significant discriminator between the High-Average and Low groups. This finding seemed quite consistent with other data on GPA and, therefore, it was concluded that the levels of motivation variable could be generalized to include attrition.

In general, participation in Psychology 100 was not considered beneficial for freshmen in terms of academic success or attrition. This conclusion was found to be valid for both Structured and Unstructured sections, for both Large and Small classes.

Predictive validity of individual AP scale scores was beyond the scope of this study but the use of Fricke's critical cut-off points was found of significant value when AP scores were used to segregate the freshman class at Missouri Southern College into motivation levels.

Recommendations

The desire of student personnel workers to assist the new freshman in his personal adjustment to college is undoubtedly a worthwhile goal. Rising enrollments, increased student heterogeneity and financial pressures seem to compound the difficulty of the task but any student who matriculates to college must be given every opportunity to succeed.

The failure of this study to demonstrate that formal freshman orientation had any consistent effect on academic success does not imply

that this activity should be eliminated from the curriculum. It does suggest, however, that course format has little impact. Perhaps course content should be re-evaluated and modified to include activities which have significant impact on academic success. The studies by Turrell (1937), Book (1937), Pressey (1928), and Eurich (1931) provide the best direction for possible change in content. These authorities emphasized the "how to study" aspect of orientation and demonstrated improved reading ability and scholarship as the result of this treatment.

The AP Scale remains a promising tool for identifying motivation levels. Perhaps the next logical step is an attempt to identify those specific characteristics which lead to high, average or low AP scores. If these characteristics are identifiable, it then becomes feasible to modify student behaviors which are compatible with academic success.

It is highly recommended that this study be replicated in other colleges and universities. It is feasible to assume that other students in unique campus climates may produce altogether different results.

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APPENDIX

APPENDIX A

SUMMARY OF HOMOGENEITY CHECK

TABLE XLV

SUMMARY OF CALCULATIONS OF "C-VALUE" FOR COCHRAN'S TEST OF HOMOGENEITY OF VARIANCE
OF NUMBER OF HOURS COMPLETED AFTER THE FIRST SEMESTER

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Levels (M+W)							
Type of Participation	3	136	183.362	515.972	0.355	0.410	Homogeneous
Level of Motivation	3	136	207.382	516.965	0.401	0.410	Homogeneous
Treatments-By-Levels (M)							
Type of Participation	3	72	192.794	479.417	0.402	0.452	Homogeneous
Level of Motivation	3	72	196.143	493.464	0.397	0.452	Homogeneous
Treatments-By-Levels (W)							
Type of Participation	3	63	203.009	578.108	0.351	0.457	Homogeneous
Level of Motivation	3	63	222.444	571.094	0.389	0.457	Homogeneous
Treatments-By-Treatments-By-Levels (M+W)							
Type of Participation	2	90	183.362	340.944	0.537	0.621	Homogeneous
Size of Class	2	90	173.338	339.461	0.510	0.621	Homogeneous
Level of Motivation	3	90	218.907	525.507	0.416	0.440	Homogeneous
Treatments-By-Treatments-By-Levels (M)							
Type of Participation	2	51	192.794	329.415	0.585	0.649	Homogeneous
Size of Class	2	51	163.894	326.437	0.501	0.649	Homogeneous
Level of Motivation	3	51	217.025	522.320	0.415	0.470	Homogeneous

TABLE XLV, Continued

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Treatments							
By-Levels (W)							
Type of Participation	2	38	203.009	383.482	0.529	0.659	Homogeneous
Size of Class	2	38	193.508	384.625	0.503	0.659	Homogeneous
Level of Motivation	3	38	232.526	576.784	0.474	0.474	Homogeneous

*Values extrapolated from Myers, 1966, p. 389.

TABLE XLVI

SUMMARY OF CALCULATIONS OF "C-VALUE" FOR COCHRAN'S TEST OF HOMOGENEITY OF VARIANCE
OF NUMBER OF HOURS COMPLETED AFTER THE SECOND SEMESTER

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Levels (M+W)							
Type of Participation	3	121	184.830	509.580	0.363	0.420	Homogeneous
Level of Motivation	3	121	198.490	507.860	0.391	0.420	Homogeneous
Treatments-By-Levels (M)							
Type of Participation	3	62	193.392	486.232	0.397	0.458	Homogeneous
Level of Motivation	3	62	192.970	492.173	0.392	0.458	Homogeneous
Treatments-By-Levels (W)							
Type of Participation	3	58	201.352	566.120	0.356	0.461	Homogeneous
Level of Motivation	3	58	209.529	556.299	0.377	0.461	Homogeneous
Treatments-By-Treatments-By-Levels (M+W)							
Type of Participation	2	80	189.340	363.470	0.521	0.628	Homogeneous
Size of Class	2	80	189.180	363.850	0.520	0.628	Homogeneous
Level of Motivation	3	80	212.930	546.200	0.390	0.446	Homogeneous
Treatments-By-Treatments-By-Levels (M)							
Type of Participation	2	43	193.390	378.440	0.512	0.655	Homogeneous
Size of Class	2	43	193.270	378.780	0.511	0.655	Homogeneous
Level of Motivation	3	43	237.340	590.690	0.402	0.470	Homogeneous

TABLE XLVI, Continued

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Treatments- By-Levels (W)							
Type of Participation	2	36	194.750	364.770	0.534	0.660	Homogeneous
Size of Class	2	36	194.750	364.770	0.534	0.660	Homogeneous
Level of Motivation	3	36	201.010	546.230	0.384	0.475	Homogeneous

*Table values extrapolated from Myers, 1966, p. 389.

TABLE XLVII

SUMMARY OF CALCULATIONS OF "C-VALUE" FOR COCHRAN'S TEST OF HOMOGENEITY OF VARIANCE
OF NUMBER OF HOURS COMPLETED AFTER AN ACADEMIC YEAR

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Levels (M+W)							
Type of Participation	3	120	758.16	2176.96	0.348	0.420	Homogeneous
Level of Motivation	3	120	820.20	2154.10	0.381	0.420	Homogeneous
Treatments-By-Levels (M)							
Type of Participation	3	62	799.40	2188.65	0.365	0.458	Homogeneous
Level of Motivation	3	62	797.50	2145.67	0.372	0.458	Homogeneous
Treatments-By-Levels (W)							
Type of Participation	3	57	817.61	2340.25	0.349	0.461	Homogeneous
Level of Motivation	3	57	865.72	2275.62	0.380	0.461	Homogeneous
Treatments-By-Treatments-By-Levels (M+W)							
Type of Participation	2	80	758.16	1511.55	0.502	0.628	Homogeneous
Size of Class	2	80	759.42	1511.28	0.503	0.628	Homogeneous
Level of Motivation	3	80	878.73	2270.60	0.387	0.446	Homogeneous
Treatments-By-Treatments-By-Levels (M)							
Type of Participation	2	43	779.40	1572.97	0.508	0.655	Homogeneous
Size of Class	2	43	796.05	1575.65	0.505	0.655	Homogeneous
Level of Motivation	3	43	944.00	2448.25	0.386	0.470	Homogeneous

TABLE XLVII, Continued

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Treatments- By-Levels (W)							
Type of Participation	2	36	770.86	1519.93	0.507	0.660	Homogeneous
Size of Class	2	36	762.75	1522.46	0.501	0.660	Homogeneous
Level of Motivation	3	36	887.72	2244.67	0.395	0.475	Homobeneous

*Table values extrapolated from Myers, 1966, p. 389.

TABLE XLVIII

SUMMARY OF CALCULATIONS OF "C-VALUE" FOR COCHRAN'S TEST OF HOMOGENEITY
OF VARIANCE OF GPA AFTER FIRST SEMESTER

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Levels (M+W)							
Type of Participation	3	136	5.645	16.493	0.342	0.410	Homogeneous
Level of Motivation	3	136	7.944	16.753	0.474	0.410	Heterogeneous
Treatments-By-Levels (M)							
Type of Participation	3	72	5.507	13.622	0.404	0.452	Homogeneous
Level of Motivation	3	72	7.842	15.132	0.518	0.452	Heterogeneous
Treatments-By-Levels (W)							
Type of Participation	3	63	7.321	20.813	0.352	0.457	Homogeneous
Level of Motivation	3	63	8.298	20.387	0.407	0.457	Homogeneous
Treatments-By-Treatments-By-Levels (M+W)							
Type of Participation	2	90	6.787	11.993	0.566	0.621	Homogeneous
Size of Class	2	90	5.704	10.843	0.526	0.621	Homogeneous
Level of Motivation	3	90	8.015	16.791	0.477	0.440	Heterogeneous
Treatments-By-Treatments-By-Levels (M)							
Type of Participation	2	51	5.507	9.459	0.582	0.650	Homogeneous
Size of Class	2	51	5.075	9.348	0.543	0.650	Homogeneous
Level of Motivation	3	51	7.826	15.323	0.511	0.465	Heterogeneous

TABLE XLVIII, Continued

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Treatments-By-Levels (W)							
Type of Participation	2	38	7.313	13.494	0.542	0.659	Homogeneous
Size of Class	2	38	7.228	13.674	0.529	0.659	Homogeneous
Level of Motivation	3	38	8.599	20.224	0.425	0.474	Heterogeneous

Table values extrapolated from Myers, 1966, p. 389.

TABLE XLIX

SUMMARY OF CALCULATIONS OF "C-VALUE" FOR COCHRAN'S TEST OF HOMOGENEITY
OF VARIANCE OF GPA AFTER SECOND SEMESTER

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Levels (M+W)							
Type of Participation	3	121	6.95	19.05	0.365	0.420	Homogeneous
Level of Motivation	3	121	8.73	18.84	0.463	0.420	Heterogeneous
Treatments-By-Levels (M)							
Type of Participation	3	62	6.07	16.09	0.377	0.458	Homogeneous
Level of Motivation	3	62	8.45	17.07	0.495	0.458	Heterogeneous
Treatments-By-Levels (W)							
Type of Participation	3	58	8.27	23.45	0.353	0.461	Homogeneous
Level of Motivation	3	58	9.24	22.27	0.415	0.461	Homogeneous
Treatments-By-Treatments- By-Levels (M+W)							
Type of Participation	2	80	6.83	13.26	0.515	0.628	Homogeneous
Size of Class	2	80	6.78	13.27	0.511	0.628	Homogeneous
Level of Motivation	3	80	9.45	19.89	0.478	0.446	Heterogeneous
Treatments-By-Treatments- By-Levels (M)							
Type of Participation	2	43	6.00	11.83	0.507	0.655	Homogeneous
Size of Class	2	43	6.00	11.84	0.507	0.655	Homogeneous
Level of Motivation	3	43	9.53	19.38	0.492	0.470	Heterogeneous

TABLE XLIX, Continued

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Treatments- By-Levels (W)							
Type of Participation	2	36	8.27	15.81	0.523	0.660	Homogeneous
Size of Class	2	36	8.81	16.14	0.546	0.660	Homogeneous
Level of Motivation	3	36	9.94	23.19	0.429	0.475	Heterogeneous

*Table values extrapolated from Myers, 1966, p. 389.

TABLE L

SUMMARY OF CALCULATIONS OF "C-VALUE" FOR COCHRAN'S TEST OF HOMOGENEITY
OF VARIANCE OF GPA AFTER THE ACADEMIC YEAR

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Levels (M+W)							
Type of Participation	3	120	6.62	18.84	0.351	0.420	Homogeneous
Level of Motivation	3	120	8.34	18.57	0.449	0.420	Heterogeneous
Treatments-By-Levels (M)							
Type of Participation	3	62	6.14	16.30	0.377	0.458	Homogeneous
Level of Motivation	3	62	8.18	17.16	0.477	0.458	Heterogeneous
Treatments-By-Levels (W)							
Type of Participation	3	57	7.84	22.71	0.345	0.461	Homogeneous
Level of Motivation	3	57	8.75	21.89	0.400	0.461	Homogeneous
Treatments-By-Treatments- By-Levels (M+W)							
Type of Participation	2	80	6.62	12.99	0.510	0.628	Homogeneous
Size of Class	2	80	6.75	13.01	0.519	0.628	Homogeneous
Level of Motivation	3	80	8.83	19.46	0.454	0.446	Heterogeneous
Treatments-By-Treatments- By-Levels (M)							
Type of Participation	2	43	6.14	12.04	0.510	0.655	Homogeneous
Size of Class	2	43	6.13	12.03	0.510	0.655	Homogeneous
Level of Motivation	3	43	9.19	19.49	0.471	0.472	Heterogeneous

TABLE L, Continued

Type of Analysis	Number of Groups	Degrees of Freedom	Largest Variance	Sum of Variances	C Ratio	Table* Value	Decision
Treatments-By-Treatments- By-Levels (W)							
Type of Participation	2	36	7.74	14.87	0.521	0.660	Homogeneous
Size of Class	2	36	8.21	15.15	0.542	0.660	Homogeneous
Level of Motivation	3	36	9.11	22.00	0.414	0.475	Homogeneous

*Table values extrapolated from Myers, 1966, p. 389.

APPENDIX B

SUMMARY OF RAW DATA

TABLE LI

SUMMARY OF DATA OF FIRST SEMESTER HOURS COMPLETED

	Structured						Unstructured						Chance			Totals
	Large			Small			Large			Small			High	Avg.	Low	
	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low				
F 12	F 11	F 13	M 14	M 14	M 1	F 14	M 17	M 11	M 16	M 17	M 16	M 16	M 16	M 14		
M 8	F W	M 17	M 17	M 13	M W	M 14	F 16	M 0	F 15	F 15	F 5	F 16	F 16	M 1		
F 15	F 15	M 16	F 8	M 15	M 7	M 15	F 7	F 13	F 16	M W	F 10	F 16	F 14	M 10		
F 13	M 17	M W	M 17	M 13	M 15	F 16	F 13	M 0	M 13	F 16	F 17	F 10	F 7	F W		
F 15	M 15	F 9	F 14	M W	M 17	M 13	M 15	M 12	F 16	M 15	M 11	F 15	F 16	M 13		
M 18	M 12	F 16	M 15	M 16	M 17	M 10	M 13	M 15	F 16	M 0	M 8	F 16	F 16	F 12		
F 15	M 14	M 14	F 16	M 14	F 11	F 16	F 13	F 12	F 17	M 11	M 0	F 9	M 14	F 10		
F 16	M 5	M 13	F 16	F 16	F 4	F 16	M 16	F 13	M 14	M 13	M 13	M 16	M 1	F 15		
												M 12	M W	F 16		
												M 10	M 18	F 13		
												M 13	M 16	F 16		
												F 14	F 8	F 11		
												F 16	F 16	M 14		
												F 16	F 16	M 10		
												F 15	M 5	M 17		
												M 8	M 13	M 14		
Number	8	8	8	8	8	8	8	8	8	8	8	16	16	16	144	
Withdrawals	0	1	1	0	1	1	0	0	0	0	1	0	1	1	7	
\bar{X} for Men	13.00	12.60	15.00	15.75	14.17	11.40	13.00	15.25	7.60	14.33	11.20	9.60	12.50	11.86	11.63	12.37
\bar{X} for Women	14.33	13.00	12.67	13.50	16.00	7.50	15.50	12.25	12.67	16.00	15.50	10.67	14.30	13.63	13.29	13.63
\bar{X} for Subjects	14.00	12.71	14.00	14.63	14.43	10.29	14.25	13.75	9.50	15.38	12.43	10.00	13.63	12.80	12.40	12.96

TABLE LII

SUMMARY OF DATA OF SECOND SEMESTER HOURS COMPLETED

	Structured						Unstructured						Chance			Totals
	Large			Small			Large			Small			High	Avg.	Low	
	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low				
F 15	F 15	F 17	M 16	M 13	M W	F 13	M 15	M 15	M 14	M 16	M 16	M 15	M 13	M 6		
F W	F W	M 16	M 16	M 8	M W	M 15	F 15	M W	F 15	F 17	F 7	F 16	F 13	M W		
F 16	F 15	M 15	F 10	M 14	M 6	M 16	F 6	F 16	F 15	M W	F 16	F 17	F 16	M W		
M 12	M 17	M W	M 10	M 11	M W	F 14	F 12	M W	M 11	F 15	F 15	F 15	F W	F 14		
F 15	M 14	F W	F 14	M W	M 13	M 13	M 12	M 7	F 11	M 17	M 13	F 13	F 13	M 0		
M 16	M 16	F 12	M 16	M 17	M 15	M 18	M W	M 12	F 15	M W	M 5	F 18	F 15	F W		
F 14	M 15	M 13	F 15	M 16	F 3	F 15	F 13	F 16	F 17	M 12	M W	F 3	M 13	F 12		
F 12	M 6	M 7	F 13	F 4	F W	F 17	M 13	F 6	M 16	M 12	M 17	M 15	M 0	F W		
												M 12	M W	F 15		
												M 12	M 15	F 10		
												M 6	M 14	F 13		
												F 16	F 13	F 10		
												F 16	F 15	M 16		
												F W	F 16	M 9		
												F 16	M 3	M 15		
												M 6	M 9	M 13		
Number	8	8	8	8	8	8	8	8	8	8	8	16	16	16	144	
Withdrawals	1	1	2	0	1	4	0	1	2	0	2	1	2	4	22	
\bar{X} for Men	16.00	13.60	12.75	14.50	13.17	11.33	15.50	13.33	11.33	13.67	14.25	12.75	11.00	9.57	9.83	12.68
\bar{X} for Women	14.00	15.00	14.50	13.00	4.00	3.00	14.75	11.50	12.67	14.60	16.00	12.67	14.44	14.43	12.33	13.17
\bar{X} for Subjects	14.29	14.00	13.33	13.75	11.88	9.25	15.13	12.29	12.00	14.25	14.83	12.71	13.06	12.00	11.08	12.92

TABLE LIII

SUMMARY OF DATA OF ACADEMIC YEAR HOURS COMPLETED

	Structured						Unstructured						Chance			Totals
	Large			Small			Large			Small			High	Avg.	Low	
	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low				
F 27	F 26	F 30	M 30	M 27	M W	F 27	M 32	M 26	M 30	M 33	M 32	M 31	M 29	M 20		
M W	F W	M 33	M 33	M 21	M W	M 29	F 31	M W	F 30	F 32	F 12	F 32	F 29	M W		
F 31	F 30	M 31	F 18	M 29	M 13	M 31	F 13	F 29	F 31	M W	F 26	F 33	F 30	M W		
F 25	M 34	M W	M 27	M 24	M W	F 30	F 25	M W	M 24	F 31	F 32	F 25	F W	F W		
F 30	M 29	F W	F 28	M W	M 30	M 26	M 27	M 19	F 28	M 32	M 24	F 28	F 29	M 13		
M 34	M 28	F 28	M 31	M 33	M 32	M 28	M W	M 27	F 31	M W	M 13	F 34	F 31	F W		
F 29	M 29	M 27	F 31	M 30	F 14	F 31	F 26	F 28	F 34	M 23	M W	F 12	M 27	F 22		
F 28	M 11	M 20	F 29	F 20	F W	F 33	M 29	F 19	M 30	M 25	M 30	M 31	M 1	F W		
												M 24	M W	F 31		
												M 22	M 33	F 23		
												M 19	M 30	F 29		
												F 30	F 21	F 21		
												F 32	F 31	M 30		
												F W	F 32	M 19		
												F 31	M 8	M 32		
												M 14	M 22	M 27		
Number	8	8	8	8	8	8	8	8	8	8	8	8	16	16	16	144
Withdrawals	1	1	2	0	1	4	0	1	2	0	2	1	1	2	5	23
\bar{X} for Men	34.00	26.20	27.75	30.25	27.33	25.00	28.50	29.33	24.00	28.00	28.25	24.75	23.50	21.43	23.50	26.00
\bar{X} for Women	28.33	28.00	29.00	26.50	20.00	14.00	30.25	23.75	25.33	30.80	31.50	23.33	28.56	29.00	25.20	27.40
\bar{X} for Subjects	29.14	26.71	28.17	28.38	26.29	22.25	29.38	26.14	24.67	29.75	29.33	24.14	26.53	25.21	24.27	26.70

TABLE LIV

SUMMARY OF DATA OF FIRST SEMESTER GPA

	Structured						Unstructured						Chance			Totals
	Large			Small			Large			Small			High	Avg.	Low	
	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low				
	F2.83	F2.18	F2.38	M2.29	M2.64	M0.30	F2.43	M3.41	M2.27	M3.25	M3.06	M2.54	M2.94	M1.81	M1.71	
	M1.07	F W	M2.71	M2.88	M2.38	M W	M3.29	F2.75	M0.00	F2.80	F3.80	F1.63	F3.38	F2.75	M0.27	
	F2.87	F2.60	M2.94	F1.80	M1.60	M1.17	M2.33	F1.60	F2.23	F3.00	M W	F1.53	F3.44	F2.00	M1.69	
	F2.00	M2.18	M W	M2.18	M1.92	M2.73	F2.81	F2.23	M0.00	M2.92	F2.81	F2.88	F2.50	F1.71	F W	
	F3.07	M2.27	F2.11	F3.43	M W	M2.00	M1.44	M1.40	M1.50	F3.31	M2.47	M1.45	F2.40	F3.38	M1.19	
	M3.06	M2.58	F1.56	M4.00	M3.69	M3.06	M2.80	M1.08	M2.00	F3.13	M0.00	M1.20	F2.44	F2.56	F1.33	
	F3.53	M1.73	M1.86	F3.19	M3.14	F0.93	F2.38	F1.80	F2.81	F3.65	M1.43	M0.00	F2.33	M3.07	F2.50	
	F2.56	M1.80	M1.65	F2.50	F3.25	F0.70	F2.94	M3.06	F1.25	M3.43	M1.90	M2.34	M3.00	M0.14	F3.60	
													M2.89	M W	F2.50	
													M3.70	M2.56	F2.30	
													M2.50	M1.94	F2.13	
													F3.00	F1.15	F3.45	
													F2.38	F4.00	M2.57	
													F3.19	F3.06	M1.23	
													F2.80	M0.67	M2.65	
													M1.82	M2.00	M1.47	
Number	8	8	8	8	8	8	8	8	8	8	8	8	16	16	16	144
Withdrawals	0	1	1	0	1	1	0	0	0	0	1	0	0	1	1	7
\bar{X} for Men	2.07	2.11	2.29	2.84	2.56	1.85	2.47	2.24	1.15	3.20	1.77	1.51	2.81	1.74	1.60	2.09
\bar{X} for Women	2.81	2.39	2.02	2.73	3.25	0.82	2.64	2.10	2.10	3.18	3.31	2.01	2.79	2.58	2.54	2.56
\bar{X} for Subjects	2.62	2.19	2.17	2.78	2.66	1.56	2.55	2.17	1.51	3.19	2.21	1.70	2.79	2.19	2.04	2.30

TABLE LV

SUMMARY OF DATA OF SECOND SEMESTER GPA

	Structured						Unstructured						Chance			Totals					
	Large			Small			Large			Small			High	Avg.	Low						
	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low									
	F2.20	F3.00	F2.88	M3.00	M2.31	M	W	F2.54	M3.13	M2.20	M3.29	M2.25	M2.19	M3.00	M3.23	M1.11					
	M	W	F	W	M2.94	M3.50	M2.00	M	W	M3.60	F2.87	M	W	F3.27	F3.82	F1.33	F3.63	F2.92	M	W	
	F2.81	F2.47	M2.87	F1.92	M1.36	M0.82	M2.81	F2.00	F2.31	F3.00	M	W	F2.50	F3.53	F2.69	M	W				
	F2.75	M2.35	M	W	M2.40	M2.00	M	W	F3.79	F2.08	M	W	M2.45	F2.67	F3.47	F2.80	F	W	F2.21		
	F3.20	M2.07	F	W	F2.79	M	W	M2.77	M1.77	M1.42	M1.50	F3.00	M2.59	M1.77	F2.31	F3.31	M0.00				
	M3.75	M2.69	F1.00	M4.00	M3.47	M2.53	M2.89	M	W	M2.00	F3.20	M	W	M0.75	F3.56	F2.93	F	W			
	F3.00	M1.33	M2.00	F3.20	M3.25	F0.75	F3.40	F2.23	F2.81	F4.00	M2.33	M	W	F1.00	M2.46	F1.83					
	F3.50	M0.89	M2.00	F3.31	F3.75	F	W	F3.41	M3.54	F1.25	M3.00	M1.58	M2.41	M2.07	M0.00	F	W				
														M3.75	M	W	F3.40				
														M3.25	M3.60	F1.31					
														M1.33	M2.00	F3.08					
														F3.19	F1.15	F2.50					
														F2.06	F3.93	M2.19					
														F	W	F2.88	M1.67				
														F3.19	M0.50	M2.40					
														M1.00	M1.50	M2.00					
Number	8	8	8	8	8	8	8	8	8	8	8	8	8	16	16	16	144				
Withdrawals	1	1	2	0	1	4	0	1	2	0	2	1	1	1	2	4	22				
\bar{X} for Men	3.75	1.87	2.45	3.23	2.40	2.04	2.77	2.70	1.90	2.91	2.19	1.78	2.40	1.90	1.56	2.27					
\bar{X} for Women	2.74	2.74	1.94	2.81	3.75	0.75	3.29	2.30	2.12	3.29	3.25	2.43	2.81	2.83	2.39	2.73					
\bar{X} for Subjects	2.89	2.11	2.28	3.02	2.59	1.72	3.03	2.47	2.01	3.15	2.54	2.06	2.64	2.36	1.98	2.49					

TABLE LVI

SUMMARY OF DATA OF ACADEMIC YEAR GPA

	Structured						Unstructured						Chance			Totals					
	Large			Small			Large			Small			High	Avg.	Low						
	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low	High	Avg.	Low									
	F2.48	F2.65	F2.67	M2.63	M2.48	M	W	F2.54	M3.28	M2.23	M3.30	M2.67	M2.34	M2.97	M2.45	M1.48					
	M	W	F	W	M2.82	M2.73	M2.24	M	W	M3.45	F2.81	M	W	F3.03	F3.81	F1.45	F3.45	F2.83	M	W	
	F2.84	F2.57	M2.90	F1.87	M1.54	M1.07	M2.58	F1.75	F2.28	F3.00	M	W	F2.03	F3.48	F2.46	M	W				
	F2.12	M2.29	M	W	M2.29	M1.95	M	W	F3.27	F2.16	M	W	M2.81	F2.74	F3.16	F2.68	F	W	F	W	
	F3.14	M2.17	F	W	F3.11	M	W	M2.33	M1.56	M1.41	M1.81	F3.05	M2.53	M1.63	F2.36	F3.34	M0.76				
	M3.38	M2.68	F1.32	M4.00	M3.58	M2.79	M2.90	M	W	M1.93	F3.07	M	W	M0.95	F3.03	F2.74	F	W			
	M3.41	M1.83	M1.93	F3.19	M3.20	F0.86	F2.87	F2.05	F3.07	F3.82	M1.85	M	W	F2.20	M2.78	F2.14					
	M2.96	M1.13	M1.80	F2.86	F3.35	F	W	F3.18	M3.28	F1.88	M3.20	M1.73	M2.34	M2.55	M0.08	F	W				
														M2.81	M	W	F2.94				
														M3.40	M3.03	F1.74					
														M1.94	M1.96	F2.55					
														F3.11	F1.25	F3.00					
														F2.22	F3.90	M2.37					
														F	W	F2.97	M1.41				
														F3.00	M0.62	M2.53					
														M1.53	M1.78	M1.70					
Number	8	8	8	8	8	8	8	8	8	8	8	8	8	16	16	16	144				
Withdrawals	1	1	2	0	1	4	0	1	2	0	2	1	1	1	2	5	23				
\bar{X} for Men	3.38	2.02	2.36	2.91	2.50	2.06	2.62	2.66	1.99	3.10	2.20	1.82	2.53	1.81	1.71	2.28					
\bar{X} for Women	2.83	2.61	2.00	2.76	3.35	0.86	2.97	2.19	2.41	3.19	3.28	2.21	2.84	2.78	2.47	2.69					
\bar{X} for Subjects	2.90	2.19	2.24	2.84	2.62	1.76	2.79	2.39	2.20	3.16	2.56	1.99	2.72	2.30	2.06	2.48					

VITA

J. Merrell Junkins

Candidate for the Degree of

Doctor of Education

Thesis: AN INVESTIGATION OF THE INFLUENCE OF AN ORIENTATION COURSE ON
ACADEMIC SUCCESS AMONG FRESHMAN STUDENTS

Major Field: Student Personnel and Guidance

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma, August 7, 1935,
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Elementary Teacher and Principal at Greenwood Rural School,
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