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SELECTED CHARACTERISTICS OF NON-RESPONDENTS TO SAMPLE SURVEYS IN A STUDY OF UNDERGRADUATES

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SELECTED CHARACTERISTICS OF NON-RESPONDENTS

TO SAMPLE SURVEYS IN A STUDY

OF UNDERGRADUATES

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CHAPTER I

INTRODUCTION

During the twentieth century there has been an attempt to measure almost every form of human endeavor. The sample survey has become a vital tool for non-experimental research in the field of human studies. Historical studies, focusing on past conditions and events, provided information that made possible new insight and greater understanding. The sample survey which focused on present conditions and events provided information which could help in formulating policies for the immediate future.

The sample survey is limited, however, by the requirement for a sample to be representative of the population. In a strict sense, a representative sample would mean that every member of the population would have an equal chance to be included. Such an ideal is rarely, if ever, achieved. Some studies have deliberately focused attention on a small subsection of the community and their results

have proven meaningful beyond the population for which they were properly representative.

Another limiting factor in the sample survey has been the large number of non-respondents. A varying proportion of the selected sample, typically between 20 and 50 percent, failed to make satisfactory returns. The literature suggested that non-respondents exhibited important differences from respondents in all kinds of psychological and sociological surveys. The literature also suggested that non-response was difficult to control.

Review of Selected Literature

At one time it was assumed that non-respondents were no different from respondents (Good, 1954, p. 626). This assumption was questioned by many. Koos (1928, p. 132) wrote, "We are still far from knowing in detail the proportion of response required to afford a given degree of validity to the findings of our investigations." In 1930, it was reported that a return of 50 percent was "normal" and it was only when exceptional care was used in the form or when the subject was of exceptional interest or importance that the investigator would be able to realize a 75 percent return (Almack, 1930, p. 216). In 1954, it was reported that a high percentage of returns, above 95 percent, were important if results were to be considered accurate (Good, 1954, p. 625). Parten (1966, p. 392) reported that from the

evidence that has been accumulating important differences were to be found between the respondent and non-respondent to questionnaires. She suggested that unless every person to whom a questionnaire was mailed responded either by mail, telephone, or personal interview or that a small random sample of the non-respondents was covered by some means, the investigator should refrain from interpreting the results of the survey. The findings could be so biased that no statistical manipulations would be meaningful. The following factors were reported by Parten (1966) to be related to the proportion of replies obtained:

1. Characteristics such as sex, economic status, and educational level of the groups solicited;
2. Interest in the subject under investigation;
3. Prestige of the sponsoring groups among the recipients of the questionnaires;
4. Appeal of the particular questionnaire;
5. Strong agreement or disagreement with the propositions in the survey.

Studies, reviewed in the literature, that investigated the differences between respondents and non-respondents were largely restricted to surveys and polls. Many of the studies were reported prior to World War II. Studies using intact groups in a college setting, designed to investigate differences between respondents and non-respondents, were almost nonexistent in the literature. Reuss (1943) reported a study done at the State College of

Washington which involved former students. A mailed questionnaire was used. Certain background information was available for both those responding and those failing to respond to the questionnaire. The availability of this background information made possible a comparison of persons responding and those not responding to the questionnaire on a selected list of indices. The available background information common to all individuals in the two groups was classified by Reuss into five major categories: (1) individual's intelligence; (2) length of stay in college; (3) community backgrounds; (4) family backgrounds; and (5) sociability.

The results showed persons responding to the questionnaire were superior in intelligence to those not responding. The individual's rank in his high school graduating class, his rank in the entering freshman class, and his first semester scholastic average, were factors considered in reaching this conclusion. Those individuals who had stayed in college for at least three years were more likely to answer the questionnaire than were those who had been in the institution a shorter length of time. This suggested to Reuss that a feeling of loyalty to the institution was a factor strongly influencing questionnaire response. Former students of rural background responded considerably better to the questionnaire than did those of urban backgrounds. From a report submitted by high school principals it was

shown that the respondents had given evidence in high school of initiative and purposefulness that would set them apart from the average and make them more likely to complete a given assignment. Reuss pointed out that differences in characteristics of persons responding and those not responding to a mailed questionnaire were highly significant on certain indices. Therefore, unless a substantial proportion of coverage can be secured, and there was no agreement in the literature as to what constituted a necessary proportion of coverage, the returns from the mailed questionnaire could not be assumed to be adequately representative of the population from which they were drawn.

Edgerton, Britt, and Norman (1947) found in a three-year follow-up study of all male contestants in the First Annual Science Talent Search that "winner" contestants made almost perfect returns, "honorable mention" contestants made the next largest percentage of returns, and "others" had the lowest percentage of returns. Also, it was determined that those individuals who replied faithfully to the questionnaire each year for four years tended to be superior on the Science Aptitude Examination. The results of these scores were as follows:

	Mean Test Score
No replies	69.5
Replied only first year	70.3
Replied first two years	74.2
Replied first three years	75.6
Replied all four years	76.0

Bebbington (1970) reported a follow-up study which was initiated in 1951. The original group included 614 boys, age thirteen, from nine selected London schools chosen on the basis of the prevailing neighborhood social class. Ten years later, 450 (73 percent) were traced and interviewed. The boys were placed into one of six groups: (1) those who responded to the second interview; (2) those who had migrated beyond the United Kingdom; (3) those who could not be traced who were labeled elusive; (4) the stallers who continually broke appointments and avoided callers; (5) the refusers who would not participate; and (6) those who had died. From the item pool of the initial survey, a number of variables were chosen for examination because of their possible relevance to the problem of non-response. These fell into three types: (1) demographic details of the boys at age 13; (2) school and court records between ages 13 and 23; and (3) indices concerned with psychological aspects of the boys at 13.

The single most important factor for distinguishing the various response categories was intelligence as measured by I.Q. Intelligence clearly separated the respondents and emigrants from the elusive, stallers, and refusers. The average I.Q. of the respondents was just over 100. The averages of the elusive and refusers were about six points lower than the respondents. The average for the stallers was about twelve points lower than the respondents. There

was no evidence that the emigrants differed from the response group.

The second most important factor was related to the environmental response such as sociometric acceptance, delinquency records, attitudes toward authority, and good participation which suggested to Bebbington that this factor was a measure of the extent to which an individual will acquiesce to his current social environment. The respondents participated in school activities and were respected by their fellow students. The tendency toward delinquency was low and the social class was somewhat higher than that of non-respondents. The elusive had a less satisfactory home life and were more likely to have come from a broken home than any of the others. The elusive had been shown little respect by their classmates in sociometric ratings and court records revealed minor delinquency. The stallers were of lower social class, came from families with the largest number of children, and evidenced strong antisocial and amoral attitudes. They had unsatisfactory school records and a tendency to serious delinquency. The refusers tended to be the youngest member of rather small families. Mutual trust with parents was markedly low for both stallers and refusers.

Robbins (1963) reported on a long-term follow-up study of former clients of a child guidance clinic. From the records of former clients, 465 subjects were found and

approached for an interview. Childhood and adult records indicating social and personality variables were used to compare refusers and stallers with cooperative subjects. Of those contacted 71 percent readily cooperated, 12 percent were permanent refusers, and the remainder were indecisive at first or failed to complete the interview.

Three variables were significant in predicting cooperative subjects. These variables were high social status (as measured by education), lack of ethnic identification, and professional or managerial occupation. Refusers were found more often among those subjects with white-collar occupations, low education, foreign-born parents, and subjects living in the area where the research was being conducted. Those subjects whose behavior had originally been diagnosed as neurotic or socially unacceptable granted interviews in the follow-up study as readily as those subjects whose behavior had originally been reported as within normal limits. The study revealed that it was much easier to gain interviews from those subjects who lived out of town. The differences were thought to have been the result of either the subjects believing the interview to be important because it was initiated from out of town or a feeling of more privacy since the subjects lived away from the geographical area in which the research was being done.

Pomeroy (1963) reported that most people were not reluctant to respond to the request for personal information

once they were convinced that the research was important, needed, and useful to others; the information would be kept in confidence; and that the respondent would not be judged by the interviewer. He suggested that poorly trained interviewers and faulty interviewing created more reluctance on the part of respondents than any other factor. Kinsey, et al (1948, p. 99) reported in his study of sexual behavior that the last persons to contribute in a 100 percent sample were sometimes the more prudish, restrained, apathetic, and sexually less active individuals. The Dohrenwend's (1968) concluded it was possible to identify cases in which both the interviewer and the respondent were responsible for refusal to give information. They suggested the optimistic hypothesis that refusal to cooperate in survey research was a deviation from behavior dictated by the dominant norms in U.S. culture. Schwartz (1964) suggested that at least a portion of refusals were due to the personality and values of the non-participants. Bebbington (1970, p. 170) reported, "It has been suggested that there may exist a hard core of those who will not respond to any survey (although there is little evidence so far to confirm this), in which case these might be better placed in the category of response failure due solely to the respondent."

Need for Study

From the results of sample surveys and polls, the researchers have suggested that there were important

differences between those subjects who responded to surveys, polls, and questionnaires, and those who failed to respond. Some of these differences were identified.

In searching the literature for studies which investigated the effects of non-response using an intact group of college students, no studies were found by this writer. Numerous studies have been undertaken on college campuses but the usual procedure was for the researcher to exclude from his sample those subjects on whom there was incomplete data. Fairchild (1969) selected as an intact group for a study all students enrolled in a college class. Although there were 410 students originally examined as prospective subjects, the final sample was composed of 222 subjects. A certain number of students had to be eliminated from the sample because not all of the necessary information on them was available. Those students who had not taken the American College Test and the Otis Quick-Scoring Mental Ability Test: Gamma Test and those students who had not completed a minimum of one college semester at the University of Oklahoma were excluded from the study. Fairchild noted the percentage of students within an intact group that were not elgible subjects for her study.

Since many studies using the sample survey method begin by choosing their sample population very carefully, then use only the data taken from that part of the population which chose to respond, a bias is likely to occur that

is neither simple nor predictable. There is a need to explore the effects of non-response.

Statement of the Problem

This study was designed to describe how college students who responded to a request for information that involved them personally differed from those students who did not respond. The differences studied were selected personal, scholastic, and psychological characteristics. All subjects in this study were students enrolled in a required educational psychology course for those majoring in education at the University of Oklahoma.

The students were asked to fill out a Self Description Questionnaire and to take the Otis Quick-Scoring Mental Ability Test: Gamma Test, Self Expectation Inventory, Self Concept of Ability Scale, and Achievement Anxiety Questionnaire. These instruments provided many kinds of information and raised the question as to why many of the subjects responded to some of the instruments but not to others.

Because the subjects in this study were students at the University of Oklahoma, some information about them was available even though they chose not to respond. The college transcript on each subject provided the following information: grade point average, the number of accumulated hours, the high school from which the subject was graduated, other colleges attended, and the declared major.

Other college records gave information as to the subject's residential and marital status. The information from questionnaire, tests, and records was used in an effort to determine the differences that might exist between respondents and non-respondents with respect to selected personal, scholastic, and psychological characteristics.

Description of Instruments Used

A description of the instruments employed in this study are presented with an appropriate abbreviation assigned to each instrument, respectively. These abbreviations will be used hereafter in presenting information about the instruments.

Self Description Questionnaire (SDQ)

This personal data form (see Appendix A) includes twenty-eight items for students to check their appropriate answer and four questions for the students to write in the appropriate information. A similar form was used by Flamini (1969) in studying college students. The form was so designed as to categorize information as the student made his choice.

Otis Quick-Scoring Mental Ability Test: Gamma Test (Otis)

The Otis Gamma represents the third and highest level of the Otis Quick-Scoring Mental Ability Tests. This test follows closely the pattern of the Otis Beta, substituting more difficult items of the same type. The Otis

Self-adminstering Test of Mental Ability: Higher Examination, which represents the earlier version of Otis Gamma, is extensively employed in general adult testing, especially for counseling and personnel selection (Anastasi, 1955). Horrocks and Schoonover (1963, p. 347) made the following statement:

> Validities and reliabilities of the Otis Quick-Scoring Mental Ability Tests are relatively satisfactory when compared with those cited for other measures of group intelligence, but unfortunately the test manual is quite vague as to the nature of the normative population and of the normative sample.

Self Expectation Inventory (SE)

The Self Expectation Inventory was developed by Binder (1965). The inventory is a short, self-report type of instrument using a Likert-type scale. It consists of twenty-five statements about school to which the subject responds according to how strongly he feels that the statement does or does not apply to him.

Self Concept of Ability Scale (SC)

The Self Concept of Ability Scale was developed by Brookover, Patterson, and Thomas (1962). It is a self-report type instrument designed to obtain information from the student in a direct straightforward manner and can be scored from the inventory itself. It is based on the Guttman scaling procedure. The questions are multiple-choice type. The subject marks the one alternative which best expresses his feelings about the statement. The

Self Concept of Ability Scale and Self Expectation Inventory were among the variables found by Jones (1966, 1968) to be significant contributors in the prediction of academic achievement.

Achievement Anxiety Questionnaire (Anxiety Scale)

The Achievement Anxiety Questionnaire was developed by Alpert and Haber (1960). The instrument is devised to indicate not only the presence or absence of anxiety, but also to indicate whether the anxiety facilitates or debilitates test performance. It consists of two independent scales: a facilitating scale of nine items based on a prototype of the item--"Anxiety helps me to do better during examinations and tests": and a debilitating scale of ten items based on a prototype of the item--"Anxiety interferes with my performance during examinations and tests." Both scales have gone through numerous revisions based upon item analysis, correlations with various criteria, and theoretical reformulations. The test-retest reliabilities for a ten-week interval are .83 and .87, respectively. The test-retest reliability over an eight-month period is .75 for the facilitating scale and .76 for the debilitating scale. The two scales are administered in one questionnaire, the items randomly mixed along with some buffer items. The subjects answer each item on a five-point scale indicating the degree to which the item applies to them.

Definition of Terms

Respondents

The term respondent was defined in terms of the five instruments administered to the subjects during the study. The respondents were those subjects who responded to all five of the instruments. They may not have answered one or more of the items on the SDQ, but all five instruments were returned to the subject's instructor.

Non-respondents

The non-respondents were those subjects who failed to return one or more of the instruments. They did, however, respond to one or more of the instruments.

Thirteen Others

There were thirteen subjects who did not return any one of the five instruments. These subjects were not included with the subjects defined as non-respondents. They were kept as a separate group and were described from the limited information available in the college records.

In summary, the sample survey became a vital tool of non-experimental research in the field of human studies. It was limited, however, by the necessity of a sample to be properly representative of the population to be studied. The researcher, in using the typical sample survey encountered the problem of establishing proper representation at two stages. The first problem occurred in designing the survey and selecting the sample. The second problem in

proper representation occurred when the returns were made and a varying proportion of the selected sample failed to make satisfactory returns.

Although it was suggested that there may be important differences between respondents and non-respondents to surveys, there was very little in the literature to substantiate the belief. Most studies investigating the differences were restricted to surveys and polls and the majority of these studies were reported prior to World War II. A review of the literature revealed no studies of respondents and non-respondents conducted in the college classroom setting where all subjects were members of an intact group and who had equal opportunity to participate or to refuse.

CHAPTER II

PROCEDURE OF THE STUDY

Research Strategy

Every field has data and a need to analyze that data. Tukey (1969, p. 83) has stated, "Bending the data to fit the analysis can be vital . . . but bending the question to fit the analysis is to be shunned at all costs." He further stated that data analysis needs to be both exploratory and confirmatory. In exploring data analysis there can be no substitute for flexibility, for adapting what was calculated both to the needs of the situation and the clues that the data have already provided. In this mode, data analysis was detective work--almost an ideal example of seeking what might be relevant. In this study an attempt was made to determine what was relevant in the data collected from students that would differentiate the respondents and non-respondents to sample surveys.

Subjects

The students in this study were University of Oklahoma college students enrolled in Education 120, Psychology of Education, during the spring term of 1969. The course

was required for all students majoring in education. Each student enrolled in one of two lecture sections and in one of 15 discussion groups. The lecture sections were taught by three professors who alternated in presenting weekly one-hour lectures. The students spent an additional hour each week in small discussion groups which were led by one of five graduate assistants.

The population was comprised of 424 subjects. Of these, 79 (18.63 percent) were males and 345 (81.37 percent) were females. The breakdown by levels within the university was: 5 (1.17 percent) freshmen; 268 (63.20 percent) sophomores; 109 (25.70 percent) juniors; 27 (6.36 percent) seniors; and 15 (3.53 percent) post-graduate students.

The range of birthdates was from 1924 through 1950. By dividing the birthdates into three year intervals the numbers and percentages were : 1948 through 1950, 346 (81.60 percent); 1945 through 1947, 46 (10.84 percent); 1942 through 1944, 10 (2.35 percent); 1939 through 1941, 8 (1.88 percent); prior to 1939, 14 (3.30 percent).

Two hundred fifty-two (59.43 percent) of the subjects had been enrolled at the University of Oklahoma for all of their college work; 85 (20.14 percent) had attended another Oklahoma college for part of their accumulated college hours; and 87 (20.62 percent) had taken part of their college work outside the State of Oklahoma.

The strategy in collecting data for this study differed from that often used in studies on college campuses. In some studies subjects were volunteers and the results of the study were based on subjects who desired to be part of a study. In still other studies the subjects on whom the data were incomplete were excluded from the study and the results were based on the respondents only.

In this study all members of an intact group were asked to complete five different instruments. All instruments were administered during a regular class period and make-up sessions were provided for students who were absent from class on the day an instrument was administered. The class instructors were charged with the responsibility of administering and scoring all of the instruments. The SDQ was administered early in the spring semester of 1969. At two other specified times the subjects were asked to complete the Otis, SE, SC, and Anxiety Scale.

There were three assumptions made in this study concerning the collection of the data. It was assumed that each subject had an equal chance to complete each of the five instruments. It was assumed that each subject was given the same directions. It was assumed that each discussion leader inferred an equal amount of importance to the task when the request for the information was presented.

Tukey (1969) suggested the need for flexibility in exploring data. The data analysis in this study was divided into three stages. Each stage evolved from the needs of

the situation and from clues the data had already provided.

Stage I for Data Analysis

All data from the five instruments completed by the subjects were tabulated. A search was then made in the college records for information not given by the subjects. College transcripts were used to compute the grade point average and the number of semester hours each subject had accumulated. The transcripts also provided information on former schools attended by transfer students. Other records in the Office of Admission and Records gave information about the subjects marital status and place of residence. Records in the College of Education provided the names of the students enrolled in the class which was selected for the study and the grades earned by the students. All information was punched on Hollorith cards which were used in processing the data.

The data were first analyzed in respect to the whole group for the purpose of describing the group. Each response indicated by each subject on the SDQ was tabulated and arranged in the form of a frequency distribution. The scores earned by the subjects on the Otis, SE, SC, and Anxiety Scale were recorded and the means and standard deviations were computed. The grade point average of each subject was also recorded and the mean and standard deviation was computed.

Stage II for Data Analysis

Making comparisons is a normal procedure with descriptive data. Good (1954) noted that comparison is a continuation of the descriptive process. Therefore, in the second stage of data analysis the subjects were divided into three groups where only information on the SDQ was used as the criterion. Group 1 were those subjects who had answered each of the questions on the SDQ. Group 2 were those subjects who left one or more items on the SDQ blank. Group 3 were those subjects who did not return the SDQ to the class instructor. These three groups were then compared in view of their high school grade point average as reported by the subjects, their college grade point average as computed from the official transcripts in the Office of Admissions and Records, and the accumulated number of hours as computed from the official transcripts. The means and standard deviations were computed for grade point averages and number of hours for each group. The significance of the difference between the means was tested by using a t test.

Using the same three groups, the response patterns were explored for the other four instruments. Would Group 1 who had completed the SDQ in its entirety also complete the other instruments? Would Group 2 who had omitted items on the SDQ also omit certain instruments? Would Group 3 who did not return the SDQ also not return the

other instruments?

Stage III for Data Analysis

The third stage of data analysis was based on the results of the second stage of data analysis. The subjects were regrouped using all five instruments, SDQ, Otis, SE, SC, and Anxiety Scale, as the criteria for determining the respondents and non-respondents for the study. The subjects were again divided into three groups. The subjects in Group 1 were those subjects who had returned all five instruments to the class instructor. One or more items on the SDQ may not have been answered but the subject had responded to all five of the instruments. This group was labeled the respondents. The subjects in Group 2 were those subjects who did not return one or more of the five instruments to the class instructor. This group was labeled the non-respondents. The subjects in Group 3 were those subjects who did not respond to any of the five instruments. There were only 13 subjects in this group. It was decided to keep these 13 subjects separate and gain whatever information was possible concerning them from college records. Therefore, the subjects who responded to all five instruments became the respondents and those who failed to respond to one or more of the instruments became the non-respondents for this study.

After all subjects had been classified, the SDQ was the first instrument examined for differences between the

respondents and non-respondents. Each item was tabulated by sex for respondents and non-respondents. A frequency count was made for each of the choices listed under each item on the SDQ. After inspecting these frequency counts, the choices for each item were reclassified into more broad categories so that the chi square statistic could be applied to determine if the results were significant at the 0.05 level of significance.

The Otis, SE, SC, and Anxiety Scale were analyzed using the following procedure:

1. The number of non-respondents were counted for each of the four instruments. The same number of subjects were then selected at random from the respondents of each of the four instruments. The college grade point average of the respondents and non-respondents were compared for each of the four instruments.

2. A frequency count was made for those subjects who responded to the Otis but did not respond to the SE; who responded to the Otis but not to the SC; who responded to the Otis but not to the Anxiety Scale.

3. A frequency count was made for those subjects who responded to the SE but not to the Otis; who responded to the SE but not to the SC; who responded to the SE but not to the Anxiety Scale.

4. A frequency count was made for those subjects who responded to the SC but not to the Otis; who responded to

the SC but not to the SE; who responded to the SC but not to the Anxiety Scale.

5. A frequency count was made for those subjects who responded to the Anxiety Scale but not to the Otis; who responded to the Anxiety Scale but not to the SE; who responded to the Anxiety Scale but not to the SC.

An equal number of subjects were drawn at random from among the subjects that had responded to each of the two instruments in each set which resulted from procedures 2, 3, 4, and 5. The means were computed for the respondents and non-respondents to these sets and the difference between the means was tested for significance by the analysis of variance. One of the basic assumptions that must be met in applying analysis of variance is that the variance, due to experimental error within each of the treatment populations, must be homogeneous. Moderate departures from this assumption do not seriously affect the sampling distribution of the resulting statistic because the F test is robust with respect to departures from homogeneity of variance (Winer, 1962, p. 92). The F-max test proposed by Hartley was used to examine the homogeneity of variances.

The random samples were drawn from the Hollorith cards that had been prepared for each of the subjects. The cards for the non-respondents to the instrument being processed were removed from the stack of cards leaving only those cards belonging to the subjects who had responded.

The cards were mixed well and the number which had been arrived at by calculating the number to be chosen at random (every twelfth, nineteenth, etc.) were extracted.

The main objective in the research strategy in this study was to look for trends by exploring the data. The goal was to identify characteristics of non-respondents as opposed to the same characteristics of respondents. The group was first studied as a whole and then divided into many smaller groups so that comparisons could be made. An attempt was made to follow the advice of Tukey (1969, p. 83), "We ought to try to calculate what will help us most to understand our data and their indications. We ought not to be bound by preconceived notions--or preconceived analysis."

CHAPTER III

PRESENTATION OF DATA

Data Analysis Stage I

The first objective of the analysis of the data was to describe the whole group from the data that had been supplied by the subjects. Frequency distributions of the data from all five instruments were constructed. As shown in Table 1, only 215 (50.71 percent) of the subjects responded to all five of the instruments administered. The SE was the instrument with the highest percentage of response. Thirty subjects (7.07 percent) failed to respond to the SE. The SC was the instrument with the lowest percentage of response. One hundred sixty-five (38.91 percent) of the subjects did not respond to this instrument. The SDQ was returned by all but 37 (8.73 percent) of the subjects but 51 (12.03 percent) did not complete all items. The Otis was not responded to by 51 (12.02 percent) of the subjects, and the Anxiety Scale was not responded to by 53 (12.50 percent) of the subjects.

TABLE 1

PERCENT OF RETURNS FOR SDQ, OTIS, SE, SC, AND ANXIETY SCALE

	Number	Percent
Self Description Questionnaire		
Responded in full	336	79.24
Responded in part	51	12.03
No response	37	8.73
Otis Quick-Scoring Mental Ability Test: Gamma Test		
Responded	373	87.97
No response	51	12.02
Self Expectation Inventory		
Responded	394	92.92
No response	30	7.07
Self Concept of Ability Scale		
Responded	259	61.08
No response	165	38.91
Achievement Anxiety Questionnaire		
Responded	371	87.50
No response	53	12.50

Table 2 shows the mean and standard deviation for the raw scores earned by 375 subjects on the Otis. The means and standard deviations are listed for the SE with 383 respondents and the SC with 260 respondents. The means and standard deviations are listed for both facilitating anxiety and debilitating anxiety for 372 respondents to the Anxiety Scale.

The SDQ (Appendix A) had 18 items which had several possible choices from which the subject selected the one most appropriate. The items elicited demographic information and school expectations and accomplishments. Frequency

distributions were constructed for each of these items on the SDQ. The percentage of each choice to an item were arranged in histograms and pie charts to illustrate trends for all of the subjects who responded to each of the items. The first 13 items include demographic information.

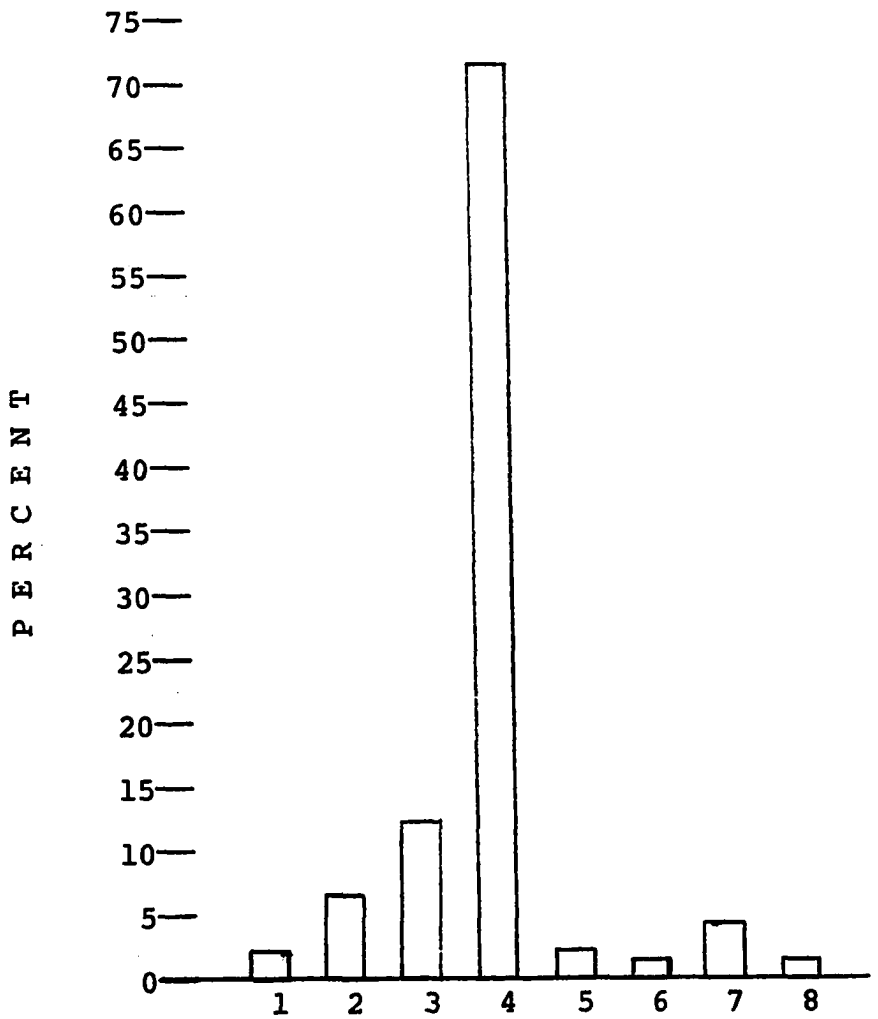
TABLE 2

MEAN AND STANDARD DEVIATION FOR OTIS SE, SC, AND ANXIETY SCALE

Instrument	Number	Mean	Std. Deviation
Otis (Raw Scores)	375	61.5813	8.3565
Self Expectation	383	31.0652	3.5700
Self Concept	260	83.6423	6.7674
Facilitating Anxiety	372	24.3413	4.4726
Debilitating Anxiety	372	28.5752	6.4688

Figure 1 shows the geographical location of the hometown of 388 subjects. The largest percentage of subjects chose the Southwest. There was no choice listed as "Oklahoma" on the SDQ but 241 subjects wrote in Oklahoma under the item and another 35 subjects checked Southwest. It was thought the subjects may not have been certain how the State of Oklahoma should be classified. The Midwest had the next largest percentage of subjects (12.88 percent) and the East Coast was third largest with 5.92 percent. The South accounted for 3.35 percent of the subjects and the West Coast and Northwest each accounted for 1.80 percent. The North had the fewest subjects with only

1.54 percent. All geographical locations of the United States were included in the study.

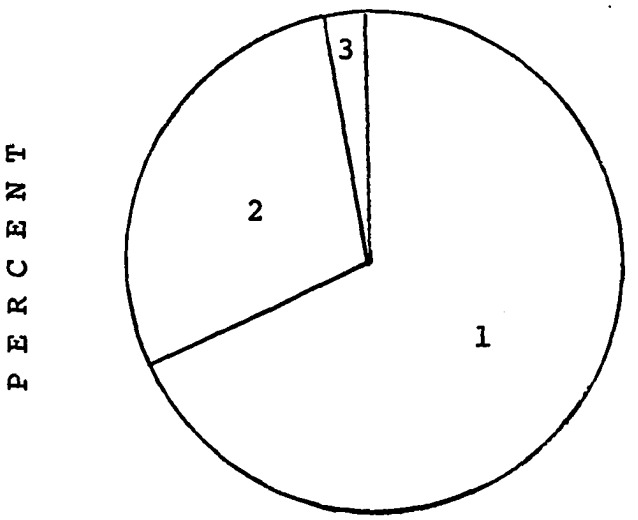


Geographical Locations of Hometowns

		N	%
1.	West Coast	(7)	1.80
2.	East Coast	(23)	5.92
3.	Midwest	(50)	12.88
4.	Southwest	(276)	71.13
5.	Northwest	(7)	1.80
6.	North	(6)	1.54
7.	South	(13)	3.35
8.	Other	(6)	1.54

Fig.1.--Geographical location of hometown of 388 subjects designated in percentages.

The residential status of the subjects is shown in Figure 2. The majority of the subjects (N = 275, 71.61 percent) were residents of Oklahoma. A large number (N = 108, 28.12 percent) were from out-of-state. There was only one foreign student among the 384 subjects that responded to this item on the SDQ.



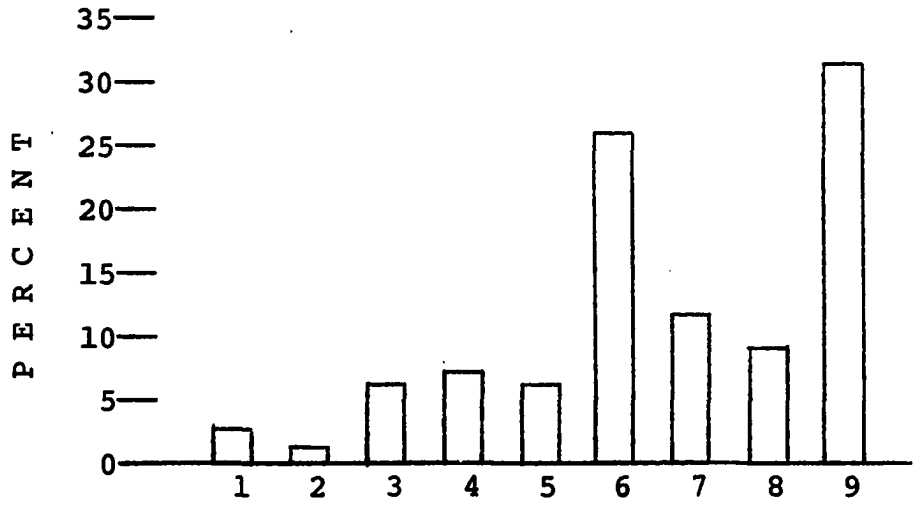
Residential Status

		N	%
1.	In-state student	(275)	71.61
2.	Out-of-state student	(108)	28.12
3.	Foreign student	(1)	.26

Fig. 2.--Residential status of 384 subjects designated in percentages.

Figure 3 shows the approximate size of hometown for 377 subjects. The fewest number of subjects (N = 4, 1.06 percent) came from towns with populations from 500 to 1000. The largest number of subjects (N = 120, 31.83 percent) came from cities of 300,000 and above. The second largest number of subjects (N = 99, 26.25 percent) came from cities

of 10,000 to 50,000. Since there was no choice for subjects who lived on farms it was assumed that rural subjects chose the towns nearest their place of residence.

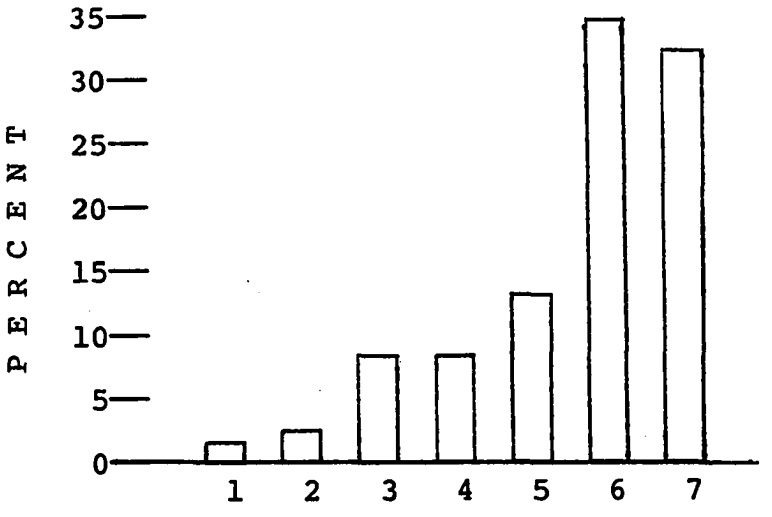


		N	%
1.	500 or below	(9)	2.38
2.	500 to 1000	(4)	1.06
3.	1000 to 3000	(21)	5.57
4.	3000 to 5000	(24)	6.36
5.	5000 to 10,000	(21)	5.57
6.	10,000 to 50,000	(99)	26.25
7.	50,000 to 100,000	(45)	11.93
8.	100,000 to 300,000	(34)	9.01
9.	300,000 and above	(120)	31.83

Fig. 3.--Approximate size of hometown of 377 subjects designated in percentages.

The approximate size of high school from which the subjects came is shown in Figure 4. Only 12 (3.12 percent) subjects had attended a high school with less than 100 students in the school. The majority of subjects (N = 250, 65.09 percent) had attended a high school of more than 1000 students. An equal number of subjects (N = 33, 8.59 percent) had attended a school from 100 to 300 and

300 to 500 students. The remaining 56 (14.58 percent) had attended schools from 500 to 1000 students.



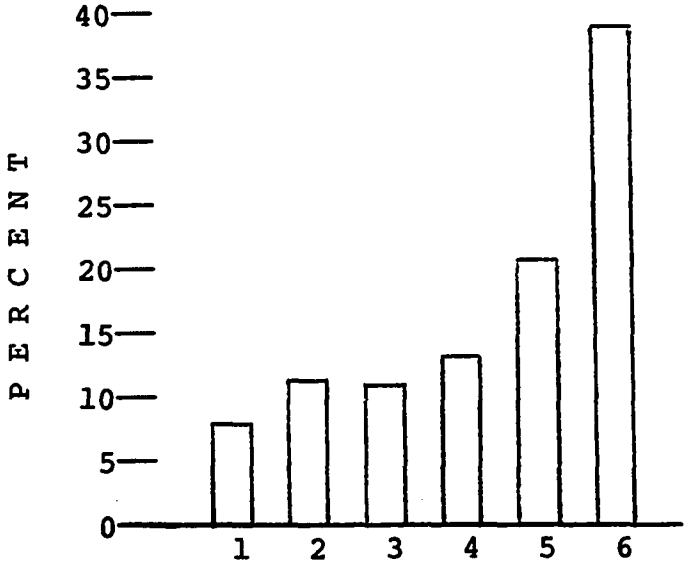
Size of High School

		N	%
1.	10 to 50	(5)	1.30
2.	50 to 100	(7)	1.82
3.	100 to 300	(33)	8.59
4.	300 to 500	(33)	8.59
5.	500 to 1000	(56)	14.58
6.	1000 to 2000	(132)	34.37
7.	2000 and above	(118)	30.72

Fig. 4.--Approximate size of high school of 384 subjects designated in percentages.

The percentages of the approximate size of the high school graduating class are designated in Figure 5. The majority of students were members of large graduating classes. Only 33 (8.52 percent) of the subjects had fewer than 50 students in their graduating class; 41 (10.59 percent) were from classes of 50 to 100; 40 (10.33 percent) were from 100 to 200; 47 (12.14 percent) were from

200 to 300; 78 (20.15 percent) were from 300 to 500; and 148 (38.24 percent) were from graduating classes of more than 500 students.



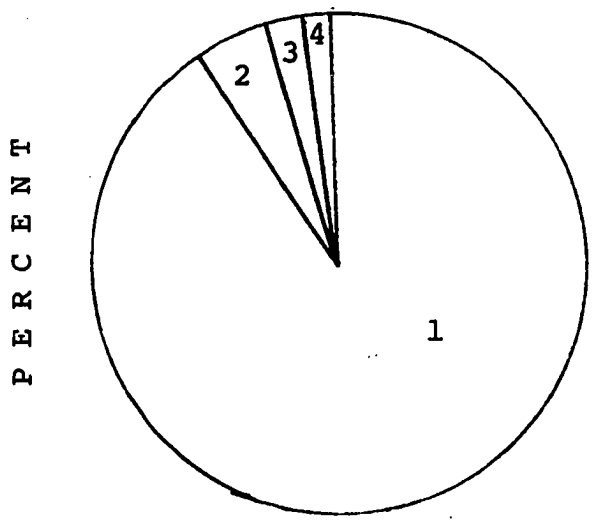
Size of High School Graduating Class

		N	%
1.	10 to 50	(33)	8.52
2.	50 to 100	(41)	10.59
3.	100 to 200	(40)	10.33
4.	200 to 300	(47)	12.14
5.	300 to 500	(78)	20.15
6.	500 and more	(148)	38.24

Fig. 5.--Approximate size of high school graduation class for 387 subjects designated in percentages.

As shown in Figure 6, the large majority of the subjects in this study were graduates of public high schools. Of the 384 subjects reporting on their last previous high school attended all but 23 (5.98 percent) had attended public schools. Private schools accounted for

4.16 percent and parochial schools for 1.30 percent of the subjects.



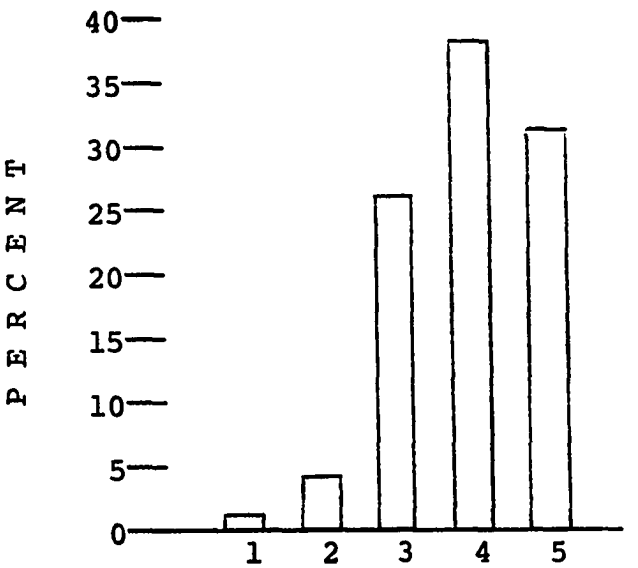
Last High School Attended

		N	%
1.	Public	(361)	94.01
2.	Private	(16)	4.16
3.	Parochial	(5)	1.30
4.	Other	(2)	.52

Fig. 6.--Last previous high school attended by 384 subjects designated in percentages.

The highest levels of education completed by the fathers of 386 subjects are shown in Figure 7. The largest percentage of fathers (N = 148, 38.34 percent) had an educational level from 13 to 16 years of school. Another 118 (30.56 percent) had earned a degree or had received an education beyond the bachelor's level. One-fourth of the fathers (N = 99, 25.64 percent) had attended only high

school and 21 (5.43 percent) had less than a high school education.



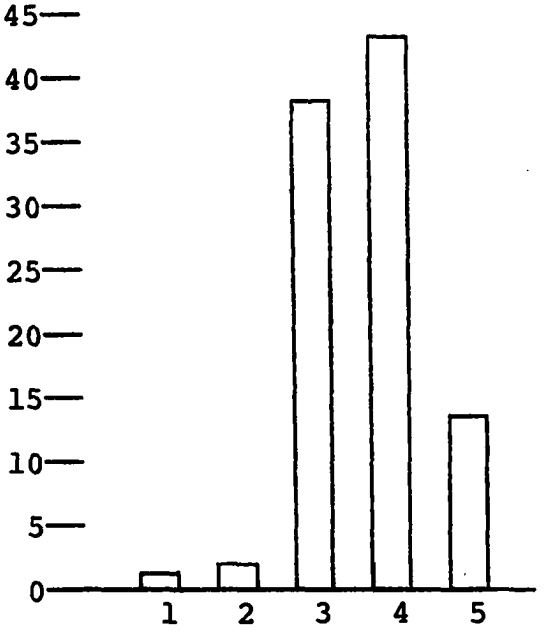
Level of Education Completed by Fathers of Subjects

		N	%
1.	0 - 5	(3)	.77
2.	6 - 9	(18)	4.66
3.	10 - 12	(99)	25.64
4.	13 - 16	(148)	38.34
5.	16 plus	(118)	30.56

Fig. 7.--Highest level of education completed by fathers of 386 subjects designated in percentages.

Figure 8 shows the highest level of education completed by the mothers of 385 subjects. The highest level of education completed by the mother varied somewhat from that of the father. The largest percentage of mothers (43.89 percent) had also attended college. The second largest percentage of mothers (38.44 percent) had attended only high school in contrast to the second largest

percentage of fathers who had earned a bachelor's degree or received an education beyond the bachelor's level. Mothers who had 16 plus years of school accounted for 14.54 percent of the subjects. Fewer mothers (3.10 percent) had less than a high school education as compared to fathers (5.43 percent). In general, the fathers showed a larger percentage at the two extreme levels of education.

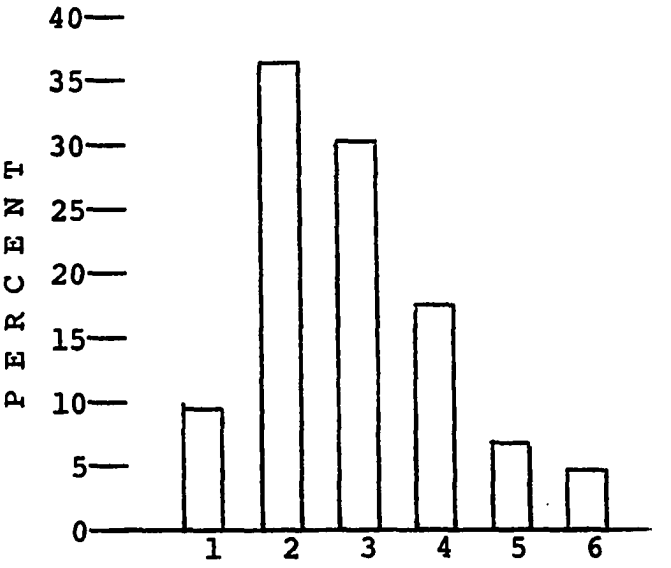


Level of Education Completed by Mothers of Subjects

		N	%
1.	0 - 5	(5)	1.29
2.	6 - 9	(7)	1.81
3.	10 - 12	(148)	38.44
4.	13 - 16	(169)	43.89
5.	16 plus	(56)	14.54

Fig. 8.--Highest level of education completed by mothers of 385 subjects designated in percentages.

The number of brothers and sisters of 385 subjects are shown in Figure 9. The largest number of subjects (N = 137, 35.58 percent) came from families with two children. The next largest number of subjects (N = 114, 29.61 percent) were from families with three children. Families with four children accounted for 15.58 percent; families of five children for 6.23 percent; and families of six or more children for 3.63 percent of the subjects. Only 36 (9.35 percent) of the subjects were only children.

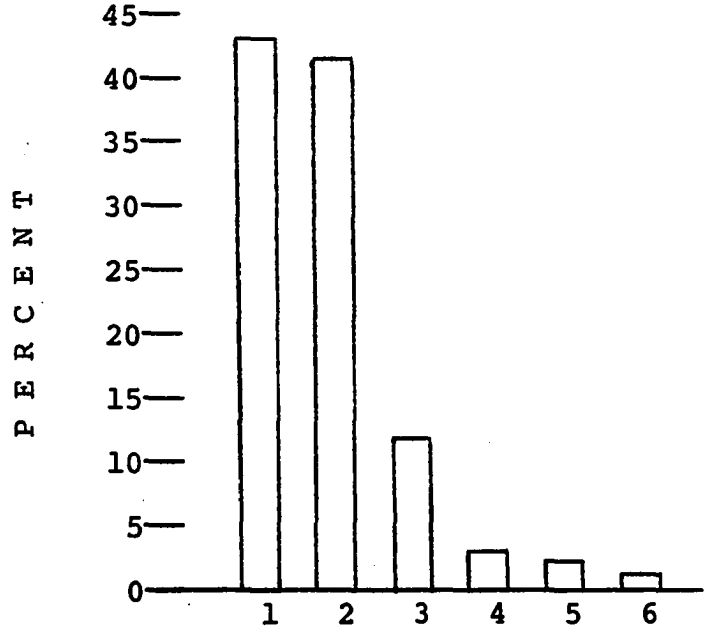


Number of Brothers and Sisters of Subjects

		N	%
1.	None	(36)	9.35
2.	One	(137)	35.58
3.	Two	(114)	29.61
4.	Three	(60)	15.58
5.	Four	(25)	6.23
6.	Five or more	(14)	3.63

Fig. 9.--Number of brothers and sisters of 385 subjects designated in percentages.

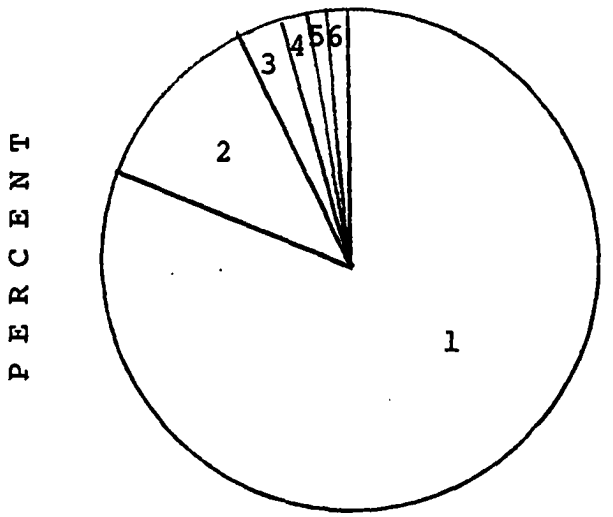
Figure 10 lists the ordinal position of birth for 382 subjects. The majority of the subjects were either the first born or second child in the family (43.19 percent and 41.09 percent, respectively). The remaining ordinal positions were as follows: third, 10.99 percent; fourth, 2.61 percent; fifth, 1.30 percent; and the sixth, .78 percent of the subjects. These ordinal positions of the participants tend to reflect average family size.



		N	%
1.	First	(165)	43.19
2.	Second	(157)	41.09
3.	Third	(42)	10.99
4.	Fourth	(10)	2.61
5.	Fifth	(5)	1.30
6.	Sixth	(3)	.78

Fig. 10.--Birth order position of 382 subjects designated in percentages.

The marital status of the subjects as shown in Figure 11 revealed that 316 (81.44 percent) of the 388 subjects were single. The second largest group were married (N = 62, 15.97 percent). Those who were divorced, widowed, or legally separated accounted for only 2.30 percent of the subjects.



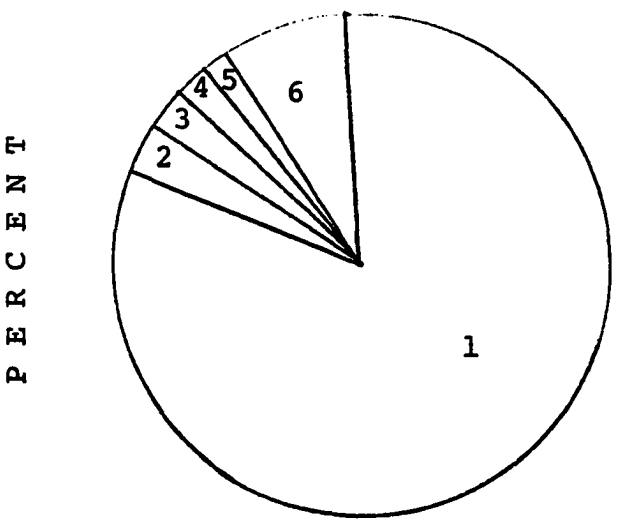
Marital Status

		N	%
1.	Single	(316)	81.44
2.	Married	(62)	15.97
3.	Divorced	(6)	1.54
4.	Widowed	(2)	.51
5.	Legally separated	(1)	.25
6.	Other	(1)	.25

Fig. 11.--Marital status of 388 subjects designated in percentages.

Figure 12 shows the military status as reported by 333 subjects. Many of the females did not respond to this item. The largest percentage of subjects had no military

status (N = 265, 79.57 percent). Of those who had military status, 46 (13.81 percent) were deferred. Seven (2.10 percent) were reservists; four (1.20 percent) were elgible for the draft; and three (.90 percent) were classified as 4-F. There were only eight (2.40 percent) who were veterans.



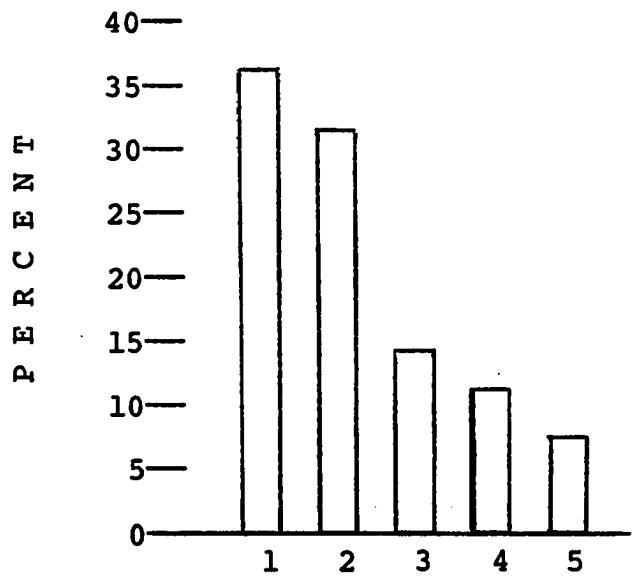
Military Status

		N	%
1.	No military status	(265)	79.57
2.	Veteran	(8)	2.40
3.	Reservist	(7)	2.10
4.	Draft eligible	(4)	1.20
5.	4-F	(3)	.90
6.	Deferred	(46)	13.81

Fig. 12.--Military status for 333 subjects designated in percentages.

College housing patterns for 384 subjects are indicated in Figure 13. There were two predominant patterns of college housing for the subjects--those living in dormitories (36.45 percent) and those living in fraternity or

sorority houses (31.25 percent). Private housing accounted for 14.58 percent of the subjects and another 10.93 percent lived at home. Only 6.77 percent of the subjects commuted to the campus.



College Housing Status

		N	%
1.	Live in dormitory	(140)	36.45
2.	Fraternity or sorority	(120)	31.25
3.	Private housing	(56)	14.58
4.	Live at home in Norman	(42)	10.93
5.	Commute	(26)	6.77

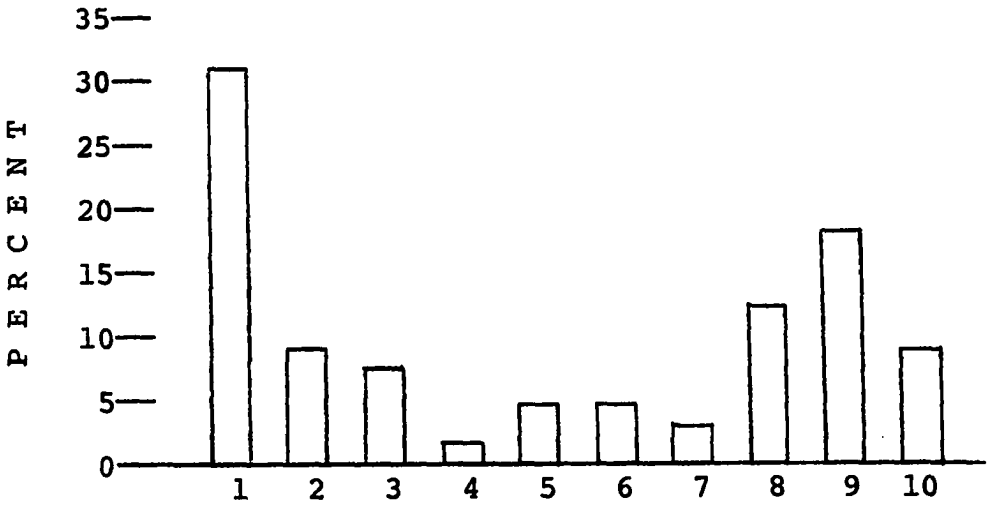
Fig. 13.--College housing status of 384 subjects designated in percentages.

The subjects expressed school expectations and school accomplishments in five of the items on the SDQ. Figure 14 shows the choices made by the subjects for their college major. From the selections made on the SDQ 131 (30.97 percent) of the subjects indicated elementary

education as their major field of study. Social Studies, Language Arts, Foreign Language, Science Education, Math Education, and Physical Education, all areas usually considered a part of secondary education, were chosen by 127 (30.29 percent) of the subjects. Special Education was chosen by 53 (12.47 percent) of the subjects. Eighty subjects marked "other." Class records and transcripts were searched in an effort to determine what major these students were pursuing. Their majors were speech therapy, early childhood education, psychology, social work, home economics, art, drama, music, and business education. In using this additional information, the subjects were reclassified into three broader categories--elementary, secondary, and special education. There were 144 (39.02 percent) elementary majors, 170 (46.07 percent) secondary majors, and 55 (14.90 percent) special education majors. These percentages were based on 369 subjects who could be classified into one of these three major fields of study.

The degrees which 392 subjects expected to earn are shown in Figure 15. The largest percentage of subjects (N = 239, 60.96 percent) were pursuing a Bachelor of Science degree. Another 124, (31.63 percent) were working for the Bachelor of Arts degree. Those subjects that marked "other" were working either for teacher certification only or a degree in the Fine Arts. The subjects working for teacher certification only were post-graduate students who held

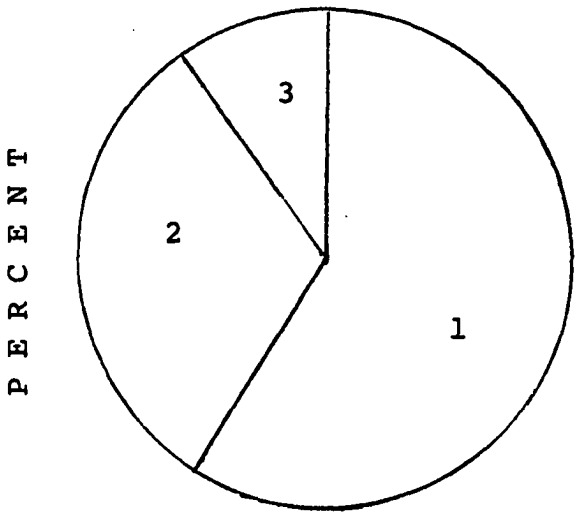
degrees in areas other than education.



Major Field of Study

		N	%
1.	Elementary	(131)	30.97
2.	Social Studies	(42)	9.95
3.	Language Arts	(32)	7.66
4.	Foreign Language	(7)	1.61
5.	Science Education	(16)	3.92
6.	Math Education	(16)	3.92
7.	Physical Education	(14)	3.23
8.	Special Education	(53)	12.47
9.	Other	(80)	18.93
10.	Not reported	(33)	7.93

Fig. 14.--Choice of college major of 391 subjects designated in percentages.

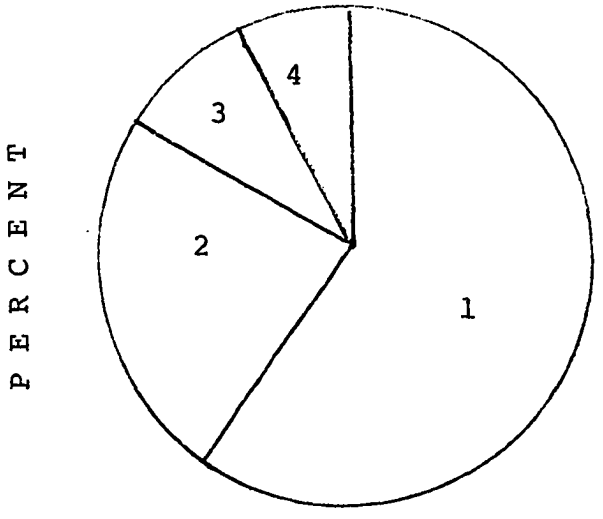


Choice for College Degree

		N	%
1.	BS	(239)	60.96
2.	BA	(124)	31.63
3.	Other	(29)	7.39

Fig. 15.--Degree currently sought by 392 subjects designated by percentages.

The rank held by 379 subjects in the high school graduating class are shown in Figure 16. This item was confusing to some of the subjects. Some who ranked in the upper five percent of their class chose "other," and some who were less than the top 75 percent chose "other." According to the choices made, the majority (N = 252, 66.49 percent) were in the top 25 percent; 87 (22.95 percent) were in the top 50 percent; 24 (6.33 percent) were in the top 75 percent; and 16 (4.22 percent) indicated "other."

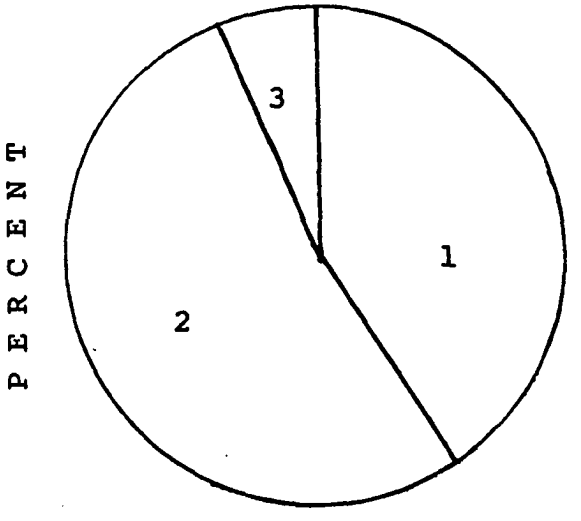


Rank in High School Graduating Class

		N	%
1.	First quarter	(252)	66.49
2.	Second quarter	(87)	22.95
3.	Third quarter	(24)	6.33
4.	Other	(16)	4.22

Fig. 16.--Quarter of high school graduating class selected by 379 subjects designated in percentages.

Figure 17 shows the grade expected on the mid-term examination by 384 subjects. The item included five choices: A, B, C, D, and F. None of the subjects chose a D or F and only 19 subjects (4.94 percent) chose a C. The grade expectation of the subjects was very high with 40.62 percent expecting an A and 54.42 percent expecting a B.

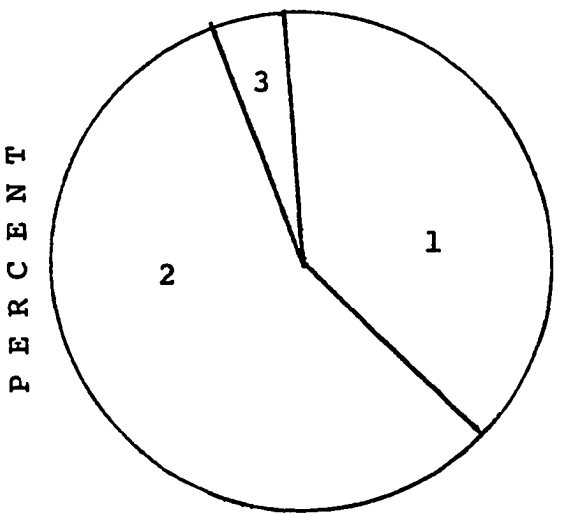


Expectation for Mid-term Examination Grade

		N	%
1.	A	(156)	40.62
2.	B	(209)	54.42
3.	C	(19)	4.94

Fig. 17.--Mid-term examination grade expected by 384 subjects designated in percentages.

Figure 18 shows the grade expected on the final examination by 383 subjects. Rather than the grade expectation being lowered for the final examination, the grade expectation became higher. Only 13 subjects (3.39 percent) expected to make a C in the course and 42.81 percent (an increase of 1.19 percent) expected to make an A, with the remaining 53.78 percent expecting to make a B. Again none of the subjects expected to make a D or an F.



Expectation for Final Examination Grade

		N	%
1.	A	(164)	42.81
2.	B	(206)	53.78
3.	C	(13)	3.39

Fig. 18.--Final examination grade expected by 383 subjects designated in percentages.

The SDQ had nine questions to which the subject responded with a yes or no answer. The questions and answers chosen by the subjects are listed in Table 3. The question answered by the largest number of subjects (387) was, "Are you a transfer student?" The response to the question was 116 (29.97 percent) subjects answered yes and 271 (70.02 percent) subjects answered no. The question, "Was O.U. your first choice in colleges?" was answered by the fewest number of subjects (378). The response to the

question was 264 (69.84 percent) subjects replied yes and 114 (30.15 percent) subjects replied no. These figures are consistent with the percentages of transfer students.

TABLE 3

NUMBER AND PERCENT OF RETURNS ON YES AND NO QUESTIONS FROM SDQ

	YES		NO	
	Number	Percent	Number	Percent
Are you directly out of high school? (N = 384)	176	45.83	208	54.16
Are you a transfer student? (N = 387)	116	29.97	271	70.02
Do you have a scholarship (academic)? (N = 383)	29	7.57	354	92.42
Do you have a loan? (N = 386)	53	13.73	333	86.26
Are you currently employed? (N = 383)	88	22.97	295	77.02
Do you have a car on campus? (N = 385)	142	36.88	243	63.11
Do you belong to a fraternity or sorority? (N = 383)	152	39.68	231	60.31
Was O.U. your first choice in colleges? (N = 378)	264	69.84	114	30.15
Was education your first choice in majors? (N = 385)	223	57.92	162	42.07

The majority of subjects were neither employed nor receiving assistance from loans or scholarships. One hundred forty-two (36.88 percent) subjects had a car on campus even though only 6.77 percent were commuters. In response to the question, "Do you belong to a fraternity or sorority?" 152 (39.68 percent) subjects said yes. In the item on college housing 31.25 percent had reported living in a fraternity or sorority houses.

One hundred seventy-six (45.83 percent) subjects reported they were directly out of high school while 208 (54.16 percent) reported they were not directly out of high school. Education was a first choice for 223 (57.92 percent) of the subjects. There was no question which asked the subject to name his first choice of major in the event it had not been education.

The goal of the first stage of data analysis was to describe all of the subjects who responded using only that information given by the subjects on the SDQ, Otis, SE, SC, and Anxiety Scale. From this analysis it was found that 71 percent of the subjects were from the Southwest and were residents of Oklahoma. There were two modes represented in the size of hometown of the subjects, the city of 10,000 to 50,000 and the city of 300,000 and above. Sixty-five percent of the subjects had graduated from high schools with more than 1,000 students and the graduating class had more

than 300 students. Ninety-four percent of the subjects had attended public schools.

The level of education for the fathers and mothers indicated 69 percent of the fathers and 58 percent of the mothers had an education that exceeded the high school level. Fifty-five percent of the subjects had one or two brothers and sisters and 84 percent of the subjects were the first born or second born child in their family. Eighty-one percent of the subjects were single and 68 percent lived in a dormitory or a fraternity or sorority house. Eighty percent of the subjects had no military status.

Elementary education was selected as the major by 31 percent of the subjects. However, when additional information from college records was utilized this percentage was increased to 39 percent and secondary education accounted for 46 percent and special education for 15 percent of the subjects. Sixty-one percent of the subjects expected to earn a Bachelor of Science degree. Also 61 percent of the subjects reported having ranked in the upper 25 percent of the high school graduating class. Ninety-five percent of the subjects expected to make an A or B in the mid-semester examination and 97 percent expected to make an A or B in the final examination.

Data Analysis Stage II

The second objective of this study was to divide the subjects into three groups using only the SDQ as the criterion. Group 1 included those subjects who completed the questionnaire in its entirety. Group 2 included those subjects who returned the questionnaire but did not answer one or more of the items on the questionnaire. Group 3 included those subjects who did not return the questionnaire.

The high school grade point average, the college grade point average, and the number of college hours accumulated were the three measures analyzed for the three groups. The high school grade point average could be examined for only Group 1 and Group 2 because the scores were reported by the subjects on the SDQ and Group 3 included those subjects who did not return the SDQ. The college grade point average and the number of college hours were computed for each of the subjects from the official transcripts on file in the Office of Admissions and Records at the University of Oklahoma.

The range in the college grade point average for the subjects was from 1.00 to 4.00. The mean for all subjects was 2.67. The range in the cumulative number of college hours was from 26 to 192. The mean for all subjects was 60.12. The mean scores and standard deviation scores of the high school and college grade point averages and the

cumulative number of hours for Groups 1, 2, and 3 are listed in Table 4.

TABLE 4

MEANS AND STANDARD DEVIATIONS OF HIGH SCHOOL AND COLLEGE GRADE POINT AVERAGES AND CUMULATIVE HOURS

	Group 1	Group 2	Group 3
High School Grade Point Average			
Number of Subjects	(344)	(32)	
Mean	3.20	3.22	
Standard Deviation	.56	.49	
College Grade Point Average			
Number of Subjects	(342)	(51)	(38)
Mean	2.72	2.53	2.40
Standard Deviation	.54	.51	.23
Cumulative Number of College Hours			
Number of Subjects	(343)	(51)	(38)
Mean	59.79	64.52	57.28
Standard Deviation	23.29	35.79	28.56

The college grade point average was highest for Group 1 and became progressively lower for the other two groups. In order to determine if these differences might be significant or occurred only by chance, the difference in the means between the groups were tested for significance at the 0.05 level by the t test. The t values are listed in Table 5. To reject at the 0.05 level of significance, a t value equal to or larger than 1.98 was necessary. Since the t ratios did not exceed 1.98, the hypothesis that the

means of the two groups were different was accepted. Whatever differences which were found between the two groups could be due to chance alone.

TABLE 5

t RATIOS FOR HIGH SCHOOL AND COLLEGE GRADE POINT AVERAGES AND CUMULATIVE HOURS

	Groups	t
High School Grade Point Average	Group 1-Group 2	.0217
College Grade Point Average	Group 1-Group 2	.2447
	Group 1-Group 3	.6772
	Group 2-Group 3	.1606
Cumulative Number of Hours	Group 1-Group 2	.9154
	Group 1-Group 3	.5228
	Group 2-Group 3	1.0608

Three questions were raised in an effort to determine if there was a pattern in the response of the subjects to the five instruments. Would the subjects in Group 1 who answered the SDQ in its entirety also respond to all of the other four instruments? Would the subjects in Group 2 who responded to the SDQ but omitted certain items respond to some of the instruments but not to others? Would the subjects in Group 3 who did not return the SDQ also fail to return the other instruments? The null hypothesis of no significant differences between or among the responses of the subjects was tested at the 0.05 level of significance by using the chi square statistic for the Otis, SE, SC, and

Anxiety Scale. Yates correction for continuity was applied where any of the frequencies fell below ten. The findings are presented in Tables 6, 7, 8, and 9, respectively.

TABLE 6

RESPONSE TO THE OTIS BY THREE GROUPS IDENTIFIED BY SDQ

	Respondents		Non-respondents	
	Number	Percent	Number	Percent
Group 1 (N = 336)	311	73.34	25	5.89
Group 2 (N = 51	41	9.66	10	2.35
Group 3 (N = 37	21	4.95	16	3.77

$Chi^2 = 43.5236$*

*Significant at the 0.05 level.

TABLE 7

RESPONSE TO THE SE BY THREE GROUPS IDENTIFIED BY SDQ

	Respondents		Non-respondents	
	Number	Percent	Number	Percent
Group 1 (N = 336)	329	77.59	7	1.65
Group 2 (N = 51)	48	11.32	3	0.70
Group 3 (N = 37)	17	4.00	20	4.71

$Chi^2 = 131.9075$*

*Significant at the 0.05 level.

TABLE 8

RESPONSE TO THE SC BY THREE GROUPS IDENTIFIED BY SDQ

	Respondents		Non-Respondents	
	Number	Percent	Number	Percent
Group 1 (N = 336)	210	49.52	126	29.71
Group 2 (N = 51	33	7.78	18	4.24
Group 3 (N = 37)	16	3.77	21	4.95

$Chi^2 = 5.5188$

TABLE 9

RESPONSE TO THE ANXIETY SCALE BY THREE GROUPS IDENTIFIED BY SDQ

	Respondents		Non-Respondents	
	Number	Percent	Number	Percent
Group 1 (N = 336)	305	71.93	31	7.31
Group 2 (N = 51)	48	11.32	3	0.70
Group 3 (N = 37)	18	4.24	19	4.48

$Chi^2 = 54.5236$*

*Significant at the 0.05 level.

There were 336 subjects who had responded to all the items on the SDQ. The response of these subjects to other four instruments was: 311 responded to the Otis; 329 to the SE; 210 to the SC; and 305 to the Anxiety Scale. There were 51 subjects who omitted certain items on the SDQ. The response of these subjects to the other four instruments was: 41 responded to the Otis; 48 to the SE; 33 to

the SC; and 48 to the Anxiety Scale. There were 37 subjects who did not return the SDQ. The response of these subjects to the other instruments was: 21 responded to the Otis; 17 to the SE; 16 to the SC; and 18 to the Anxiety Scale. The differences in the response of the subjects were tested using the chi square and applying Yates correction for continuity where any of the frequencies fell below ten. The chi square value computed for the Otis, SE, and Anxiety Scale turned out to be larger than the table value for two degrees of freedom at the 0.05 level of significance, therefore, the hypothesis that the variables were independent in the population that yielded the sample was rejected for the Otis, SE, and Anxiety Scale. The chi square value computed for the SC turned out to be smaller than the table value for two degrees of freedom at the 0.05 level of significance, therefore, the hypothesis that the variables were independent in the population that yielded the sample failed to be rejected.

In summary, the second stage of data analysis examined the high school grade point average, college grade point average, and the number of accumulated hours for three groups that were formed using the SDQ as the criteria. There was a pattern in the grade point average based on the level of response. The college mean grade point average of Group 1 was 2.72. The mean grade point average of Group 2 was 2.53. The mean grade point average of Group 3 was 2.40.

The differences, however, were not significant at the 0.05 level of significant when the t test was applied.

In examining the response patterns to the Otis, SE, SC, and Anxiety Scale for the three groups that had been identified by the SDQ, it was found the variables were not independent in the population for the Otis, SE, and Anxiety Scale. The SC was the only instrument that appeared to have elicited a change in the response pattern for those who had responded to the SDQ.

Data Analysis Stage III

In the third stage of data analysis the subjects were divided into three groups using the SDQ, Otis, SE, SC, and Anxiety Scale as the criteria. The subjects who had responded to all five instruments became the respondents for the study. The subjects on whom there was missing data in the nature of one or more instruments that had not been returned became the non-respondents in the study. Thirteen subjects did not return any of the five instruments. It was decided not to include this small number of subjects with the non-respondents. From inspection, they appeared to be different from those who had supplied some data while withholding other data. The number and percentage of the respondents, non-respondents, and the 13 others are listed in Table 10.

TABLE 10

NUMBER AND PERCENT OF THE SUBJECTS CLASSIFIED AS RESPONDENTS, NON-RESPONDENTS, AND THE 13 OTHERS

		Number	Percent
Respondents	Males	34	8.02
	Females	181	42.69
Non-respondents	Males	43	10.14
	Females	153	36.08
"13 others"	Males	2	.47
	Females	11	2.59
Total Number		424	

In analyzing the data from the SDQ for the effects of sex in the differences between respondents and non-respondents, there were three items that were significant at the 0.05 level of significance. These three items were: (1) highest level of education completed by the father; (2) highest level of education completed by the mother; and (3) college housing status.

Tables 11 and 12 show the levels of education for the fathers of the male and female respondents and the male and female non-respondents. Of the 34 males in the respondent group, 24 (70.59 percent) of their fathers had not attended school beyond high school and only three (8.82 percent) of the fathers had attained a bachelor's degree or more. Of the 181 females in the respondent group,

49 (27.07 percent) of their fathers had not attended school beyond the high school level but 68 (37.57 percent) of the fathers had earned a bachelor's degree or more.

TABLE 11

HIGHEST LEVEL OF EDUCATION COMPLETED BY FATHERS OF MALE AND FEMALE RESPONDENTS

	N	0-12	13-16	16+	df	Chi^2
Males	34	24	7	3	2	25.0172*
Females	181	49	64	68		

*Significant at the 0.05 level.

TABLE 12

HIGHEST LEVEL OF EDUCATION COMPLETED BY FATHERS OF MALE AND FEMALE NON-RESPONDENTS

	N	0-12	13-16	16+	df	Chi^2
Males	40	13	15	12	2	1.4175
Females	131	34	63	34		

There was also a difference in the level of education of the mothers of male and female respondents as shown in Tables 13 and 14. Of the 34 males in the respondent group, 25 (73.53 percent) of the mothers had not attended school beyond the high school level and only one (2.94 percent) mother had an education beyond the bachelor's degree. Of the 181 females in the respondent group, 68 (37.57 percent) of the mothers had not attended school beyond high

school but 24 (12.33 percent) had an education beyond the bachelor's degree. The pattern for both the fathers and mothers of the male and female non-respondents was toward equal distribution in the two categories of 0-12 years and 16 plus years of education. Approximately 30 percent of both the fathers and mothers of the non-respondents were in these two categories.

TABLE 13

HIGHEST LEVEL OF EDUCATION COMPLETED BY MOTHERS OF MALE AND FEMALE RESPONDENTS

	N	0-12	13-16	16+	df	Chi^2
Males	34	25	8	1	2	15.3490*
Females	181	68	89	24		

*Significant at the 0.05 level.

TABLE 14

HIGHEST LEVEL OF EDUCATION COMPLETED BY MOTHERS OF MALE AND FEMALE NON-RESPONDENTS

	N	0-12	13-16	16+	df	Chi^2
Males	43	14	16	13	2	0.1392
Females	153	53	58	42		

The college housing status shown in Tables 15 and 16 was the third item on the SDQ that was significant in analyzing the data for sex differences. Of the male

respondents, two (5.88 percent) lived in a fraternity house; 12 (35.29 percent) lived in a dormitory; and 20 (58.82 percent) lived in other housing. Of the 181 female respondents, 58 (32.22 percent) lived in a sorority house; 73 (40.55 percent) lived in a dormitory; and 49 (27.22 percent) lived in housing other than a sorority house or dormitory. Only 5.88 percent of the male respondents lived in fraternity houses as compared to 32.22 percent of the female respondents who lived in sorority houses.

TABLE 15

COLLEGE HOUSING STATUS OF MALE AND FEMALE RESPONDENTS

	N	Greek	Dorm	Other	df	Chi^2
Male	34	2	12	20	2	16.1332*
Female	180	58	73	49		

*Significant at the 0.05 level.

TABLE 16

COLLEGE HOUSING STATUS OF MALE AND FEMALE NON-RESPONDENTS

	N	Greek	Dorm	Other	df	Chi^2
Male	42	9	16	17	2	4.8129
Female	143	57	41	45		

After analyzing the SDQ for sex differences between the respondents and non-respondents, each of the SDQ items was analyzed for the differences that might exist between the respondents and non-respondents. A summary of the chi square values for these items is presented in Table 17.

Six of the items on the SDQ were significant at the 0.05 level of significance. The number and percentages of respondents and non-respondents for each of the classifications on these six items are shown in Tables 18 through 23.

Table 18 shows the differences found between the respondents and non-respondents in the choice of major field of study. The respondents included a larger percentage of elementary majors. Of the 39.02 percent of elementary education majors, 24.12 percent were to be found in the respondents as compared to 14.90 percent for the non-respondents. Secondary majors accounted for 51.76 percent of the non-respondent group but only 41.20 percent of the respondent group. Special education majors were found to be distributed in approximately equal numbers between the two groups.

The marital status of the subjects is shown in Table 19. The respondents had a larger percentage of subjects who were married or had been married (12.44 percent as compared to 6.22 percent for the non-respondents). Eighty-one percent of all subjects were single. The subjects that were single accounted for 86.63 percent of the non-respondents but only 76.74 percent of the respondents.

TABLE 17

SUMMARY OF CHI SQUARE VALUES
FOR ITEMS FROM THE SDQ

Items	df	Chi^2
College major	2	6.0154*
Approximate size of hometown	2	0.7962
Geographical location of hometown	1	0.1440
Approximate size of high school	1	0.0116
Approximate size of graduation class	1	0.1369
Marital status	1	6.4418*
Number of brothers and sisters	2	7.7765*
Birth order position	2	0.0645
Military status (males)	1	0.0016
Highest level of education completed by father	2	6.3711*
Highest level of education completed by mother	2	2.7936
College housing status	2	4.0944
Mid-term exam grade expected	1	0.1598
Final exam grade expected	1	0.1670
Quarter of high school graduating class subject was in	1	2.2904
Last previous high school attended	1	0.0141
Residential status	1	6.4008*
Degree being sought	2	1.6479
Is subject directly out of high school?	1	12.7918*
Is subject a transfer student?	1	0.0055
Does subject have an academic scholarship?	1	0.3897
Does subject have a loan?	1	0.0871
Is subject employed?	1	2.6615
Does subject have a car on campus?	1	0.3561
Does subject belong to a fraternity or sorority?	1	1.2197
Was O.U. first choice?	1	0.1185
Was education a first choice?	1	1.8448

*Significant at 0.05 level.

TABLE 18

NUMBER AND PERCENT OF RESPONDENTS AND NON-RESPONDENTS CLASSIFIED AS ELEMENTARY, SECONDARY, OR SPECIAL EDUCATION MAJORS

	Number	Percent Sub-groups	Percent Total
Respondents			
Elementary	89	44.72	24.12
Secondary	82	41.20	22.22
Special education	28	14.07	7.59
Total percent of respondents		53.92	
Non-respondents			
Elementary	55	32.35	14.90
Secondary	88	51.76	23.85
Special education	27	15.88	7.32
Total percent of non-respondents		46.07	
Total	369		100.00

TABLE 19

NUMBER AND PERCENT OF RESPONDENTS AND NON-RESPONDENTS CLASSIFIED AS SINGLE OR MARRIED

	Number	Percent Sub-groups	Percent Total
Respondents			
Single	165	76.74	41.04
Married or been married	50	23.25	12.44
Total percent of respondents		53.48	
Non-respondents			
Single	162	86.63	40.30
Married or been married	25	13.36	6.22
Total percent of non-respondents		46.52	
Total	402		100.00

Table 20 shows the number and percentages for the number of brothers and sisters indicated by the subjects. The number of only children were distributed in approximately equal numbers between the respondents and non-respondents, however, there were more only children in the non-respondent group than would have been expected by chance alone. The number of subjects with one or two brothers or sisters were within the normal expectancy for both the respondents and non-respondents. The respondents had a larger percentage of subjects with more than two brothers and sisters (15.50 percent as compared to 9.82 percent for non-respondents).

TABLE 20

NUMBER AND PERCENT OF RESPONDENTS AND NON-RESPONDENTS CLASSIFIED BY NUMBER OF BROTHERS AND SISTERS

	Number	Percent Sub-groups	Percent Total
Respondents			
Only child	18	8.37	4.65
One or two sibblings	137	63.72	35.40
More than two sibblings	60	27.90	15.50
Total percent of respondents		55.55	
Non-respondents			
Only child	19	11.04	4.91
One or two sibblings	115	66.86	29.72
More than two sibblings	38	22.09	9.82
Total percent of non-respondents		44.44	
Total	387		100.00

The highest level of education completed by the fathers of respondents and non-respondents is shown in Table 21. The fathers of the respondents were almost equally divided among the three categories. The respondents had a larger percentage of fathers in the 0-12 and 16 plus categories than did the non-respondents whose highest percentage was in the 13-16 years category. When the level of education of the fathers had been analyzed in looking for the effects of sex differences, it was found that 37.57 percent of the fathers of the female respondents were in the 16 plus category and 70.59 percent of the fathers of the males were in the 0-12 years category.

TABLE 21

NUMBER AND PERCENT OF RESPONDENTS AND NON-RESPONDENTS CLASSIFIED BY HIGHEST LEVEL OF EDUCATION OF THE FATHER

	Number	Percent Sub-groups	Percent Total
Respondents			
0 - 12 years	73	33.95	18.91
13 - 16 years	71	33.02	18.39
16+ years	71	33.02	18.39
Total percent of respondents		55.69	
Non-respondents			
0 - 12 years	47	27.48	12.18
13 - 16 years	78	45.61	20.21
16+ years	46	26.90	
Total percent of non-respondents		44.30	
Total	386		100.00

The residential status for the respondents and non-respondents is shown in Table 22. The subjects who were residents of Oklahoma accounted for 71.43 percent of the subjects in the study with 42.60 percent of these being in the respondent group and 28.83 percent in the non-respondent group.

TABLE 22

NUMBER AND PERCENT OF RESPONDENTS AND NON-RESPONDENTS CLASSIFIED BY RESIDENTIAL STATUS

	Number	Percent Sub-groups	Percent Total
Respondents			
In-state	164	76.63	42.60
Out-of-state	50	23.36	12.99
Total percent of respondents		55.58	
Non-respondents			
In-state	111	64.91	28.83
Out-of-state	60	35.08	15.58
Total percent of non-respondents		44.41	
Total	385		100.00

Table 23 shows the number and percentage of yes and no responses by the respondents and non-respondents to the question asking them if they were directly out of high school. Since many of the subjects had been in college one year or more, some of the subjects may have interpreted the question in a different way than others. The respondents had

a higher percentage of yes responses (30.50 percent as compared to 16.28 percent for the respondents).

TABLE 23

NUMBER AND PERCENT OF RESPONDENTS AND NON-RESPONDENTS CLASSIFIED BY QUESTION, "ARE YOU DIRECTLY OUT OF HIGH SCHOOL?"

	Number	Percent Sub-groups	Percent Total
Respondents			
Yes	118	54.88	30.50
No	97	45.11	25.06
Total percent of respondents		55.55	
Non-respondents			
Yes	63	36.62	16.28
No	109	63.37	28.16
Total percent of non-respondents		44.44	
Total	387		100.00

The first procedure followed in analyzing the data from the Otis, SE, SC, and Anxiety Scale was to count the number of non-respondents for each of the four instruments. An equal number of subjects were then selected at random from the respondents to the four instruments. The mean score of the college grade point average was computed for both the respondents and non-respondents to the Otis, SE, SC, and Anxiety Scale. Each set of means was compared and their differences were tested for significance at the 0.05 level of significance by the analysis of variance statistic.

A summary of the data is listed in Table 24. Appendix E contains complete data.

TABLE 24

F RATIOS FOR THE RESPONDENTS AND NON-RESPONDENTS TO THE OTIS, SE, SC, AND ANXIETY SCALE USING THE MEAN COLLEGE GRADE POINT AVERAGES

	N	Means (Grade Point Average) Respondents	Non-respondents	F
Otis	38	2.7052	2.4463	4.4174*
SE	29	2.5700	2.5237	0.0468
SC	152	2.6853	2.6510	0.1551
Anxiety Scale	42	2.6359	2.4664	1.2000

*Significant at the 0.05 level.

The range in the college grade point average for all subjects in the study was from 1.00 to 4.00. The mean college grade point average for all subjects was 2.67. The mean for the respondents on all four instruments was higher than the mean for the non-respondents, however, the only F ratio that was significant at the 0.05 level of significance was for the respondents and non-respondents to the Otis.

The second procedure followed in analyzing the data from the Otis, SE, SC, and Anxiety Scale was to count the subjects who responded to the Otis but did not respond to the SE; who responded to the Otis but not to the SC; who responded to the Otis but not to the Anxiety Scale. The raw

scores obtained on the Otis for each of these three combinations were tabulated and the arithmetic means were computed. An equal number of subjects were chosen at random from among the subjects who had responded to the Otis and SE, the Otis and SC, and the Otis and Anxiety Scale. The raw scores obtained on the Otis for each of these three combinations were tabulated and the arithmetic means were computed. The difference between the means of the Otis for the respondents and non-respondents to the SE, SC, and Anxiety Scale were tested for significance at the 0.05 level of significance by the analysis of variance test. A summary of the F ratios for the respondents and non-respondents to the SE, SC, and Anxiety Scale using the means of the Otis raw scores is shown in Table 25.

Table 25

F RATIOS FOR THE RESPONDENTS AND NON-RESPONDENTS TO THE SE, SC, AND ANXIETY SCALE USING THE MEANS OF THE OTIS RAW SCORES

	N	Means (Otis Raw Score) Respondents	Non-respondents	F
SE	20	61.0000	64.0500	0.98
SC	135	60.7703	61.9259	1.27
Anxiety Scale	28	60.3214	63.2500	1.58

The Otis was taken by 375 subjects in the study. The mean of the raw scores was 61.5813. The difference in the

means of the Otis for the respondents and non-respondents to the SE, SC, and Anxiety Scale was not significant at the 0.05 level of significance.

The third procedure followed in analyzing the data from the Otis, SE, SC, and Anxiety Scale was to count the subjects who responded to the SE but not to the Otis; who responded to the SE but not to the SC; who responded to the SE but not to the Anxiety Scale. The scores earned on the SE for each of these three combinations were tabulated and the arithmetic means were computed. An equal number of subjects were chosen at random from among the subjects who had responded to the SE and Otis, to the SE and SC, and to the SE and to the Anxiety Scale. The scores earned on the SE for each of these three combinations were tabulated and the arithmetic means were computed. The difference between the means of the SE for the respondents and non-respondents to the Otis, SC, and Anxiety Scale was tested for significance at the 0.05 level of significance by the analysis of variance test. A summary of the F ratios for the respondents and non-respondents to the Otis, SC, and Anxiety Scale using the means of the SE scores are shown in Table 26.

The SE was responded to by 383 subjects in the study. The mean score was 31.06. The difference in the means of the SE for the respondents and non-respondents to the Otis was significant at the 0.05 level of significance. The difference in the means of the SE for the respondents and

non-respondents to the SC and Anxiety Scale was not significant.

TABLE 26

F RATIOS FOR THE RESPONDENTS AND NON-RESPONDENTS TO THE OTIS, SC, AND ANXIETY SCALE USING THE MEANS OF THE SE SCORES

	N	Means (SE) Respondents	Non-respondents	F
Otis	28	31.9642	29.7857	4.6618*
SC	124	31.2661	30.9435	0.5100
Anxiety Scale	15	31.7333	31.8000	0.0026

*Significant at the 0.05 level.

The fourth procedure followed in analyzing the data from the Otis, SE, SC, and Anxiety Scale was to count the subjects who responded to the SC but not to the Otis; who responded to the SC but not to the SE; who responded to the SC but not to the Anxiety Scale. Twenty-one subjects responded to the SC but not to the Otis. Only one subject responded to the SC who did not respond to the SE. Eight subjects responded to the SC who did not respond to the Anxiety Scale. Therefore, the mean score of the subjects who responded to the SC but not to the Otis was the only score used in these three combinations. An equal number of subjects were chosen at random from among those subjects who had responded to both the SC and the Otis and the mean

score was computed from the SC scores of the selected subjects. The difference between the means of the SC for the respondents and non-respondents to the Otis was tested for significance at the 0.05 level of significance by the analysis of variance test.

The mean score for the 260 subjects that responded to the SC in the study was 83.64. The mean score for the 21 subjects who responded to the Otis was 82.95. There was no significant difference between the means for those subjects that responded to both the SC and Otis as compared to those who responded to the SC but not to the Otis.

The fifth and last procedure used in analyzing the data from the Otis, SE, SC, and Anxiety Scale was to count the subjects who responded to the Anxiety Scale but not to the Otis; who responded to the Anxiety Scale but not to the SE; who responded to the Anxiety Scale but not to the SC. The scores earned by these subjects on the facilitating and debilitating scales of the Anxiety Scale were tabulated for the three combinations and the arithmetic means were computed. An equal number of subjects were selected at random from the subjects who had completed the Anxiety Scale and Otis, the Anxiety Scale and SE, and the Anxiety Scale and SC. The scores earned on the facilitating and debilitating scales of the Anxiety Scale for each of these combinations were tabulated and the arithmetic means were computed. The difference between the means of the

facilitating and debilitating Anxiety Scales was tested for significance at the 0.05 level of significance by the analysis of variance test. A summary of the F ratios for the respondents and non-respondents to the Otis and SC using the means of the facilitating and debilitating scores of the Anxiety Scale are shown in Tables 27 and 28.

TABLE 27

F RATIOS FOR THE RESPONDENTS AND NON-RESPONDENTS TO THE OTIS AND SC USING THE MEANS OF THE FACILITATING SCORES OF THE ANXIETY SCALE

	N	Means (Facilitating Anxiety) Respondents	Non-respondents	F
Otis	25	23.8800	24.2000	0.0725
SC	120	24.0500	24.4916	0.5700

TABLE 28

F RATIOS FOR THE RESPONDENTS AND NON-RESPONDENTS TO THE OTIS AND SC USING THE MEANS OF THE DEBILITATING SCORES OF THE ANXIETY SCALE

	N	Means (Debilitating Anxiety) Respondents	Non-respondents	F
Otis	25	29.6400	30.2000	0.1161
SC	120	28.9500	28.0916	1.0318

"Thirteen Others"

The small group of subjects who did not respond to any of the five instruments was not included in the non-respondents for this study. The non-respondents had responded to one or more of the instruments so these 13 subjects were different from the non-respondents in that they had not responded to any of the instruments. The group was comprised of 11 females and two males. All were born in 1948 and 1949 except one subject who was born in December, 1947. All were listed on the rolls filed in the College of Education for the spring semester enrollment of Psychology of Education. However, only six of the 13 had earned a letter grade (two B's, two C's, and two D's); the others had received an I or W (incomplete or withdrawal) for the course. The grade point averages ranged from 1.59 to 2.96 with a mean grade point average of 2.15 and a median of 2.08. The number of cumulative hours ranged from 13 to 93 with a mean of 49. Ten of the subjects had been residents of Oklahoma. All but one came from an urban area. Two were from the Midwest and one was from the East Coast.

In reviewing the records of these 13 subjects one year later in the Spring of 1970, it was learned that two subjects had withdrawn from the University in March, 1969 (during the semester of this testing). Four others were no longer enrolled in the University. Of the seven subjects

who had continued to matriculate, five were single and two were married. All seven lived in Norman but only one belonged to a sorority. Two were listed as elementary majors, one as a special education major, one as a health and physical education major, one in sociology, and two were unknown. Reuss (1943) suggested that a feeling of loyalty to the institution was a factor strongly influencing questionnaire response. Since only seven of the 13 subjects continued to matriculate at the University the following school year, the question of whether or not these students felt a sense of belonging was raised.

In the third stage of data analysis the data was analyzed for the differences between respondents and non-respondents. Six items on the SDQ were found to be significant at the 0.05 level of significance. These items were: (1) major area of study; (2) marital status; (3) number of brothers and sisters; (4) highest level of education completed by the father; (5) residential status; and (6) was the subject directly out of high school.

In the major area of study, it was found a comparable percentage of elementary and secondary majors were in the respondent group. The non-respondent group had a larger percentage of secondary majors. Therefore, the respondents had more elementary majors and the non-respondents had more secondary majors.

The respondents had a larger percentage of married subjects while the non-respondents had a larger percentage of single subjects. The respondents had a larger percentage of subjects with more than two brothers and sisters. The non-respondents had more subjects who were an only child than would have been expected by chance alone. Therefore, the respondents tended to come from larger families than the non-respondents.

The level of education of the fathers of the respondents was found to be equally distributed in the three categories of 0-12, 13-16, and 16 plus. The percentages of fathers in the 0-12 and 16 plus categories were larger than for the fathers of the non-respondents whose largest percentage was in the 13-16 category.

The respondents had a larger percentage of subjects who were residents of Oklahoma while the non-respondents had more out-of-state subjects. The respondents had a larger percentage of subjects directly out of high school.

There were three items in which significant differences were found among the respondents when divided into male respondents and female respondents. The three items were: (1) educational level of the fathers; (2) educational level of the mothers; and (3) college housing status.

In comparing the educational level of the fathers of the male and female respondents, the majority of fathers of the males had from 0-12 years of education. This was in

sharp contrast to the females whose largest percentage of fathers was in the 16 plus category. A similar pattern was also found in the educational level of the mothers of the male and female respondents.

The college housing status also showed significant differences between the male and female respondents. Only two of the 34 males (5.88 percent) lived in a fraternity as compared to 58 of the 181 females (32.22 percent) who lived in a sorority.

Two significant differences were found in exploring the data from the Otis and SE. The difference in the mean grade point average was found to be significant at the 0.05 level for the respondents and non-respondents to the Otis. The difference in the means of the SE scores was also significant for the respondents and non-respondents to the Otis. Those subjects who responded to the Otis had a higher grade point average and a higher SE score than the non-respondents to the Otis.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

To study the effects of non-response, a large amount of data was collected from an intact group of students enrolled in their first required course after admission to the School of Education at the University of Oklahoma. The problem in this study was to search for the ways in which college students who responded to the request for information that involved them personally, differed from those students who did not respond to the same request in respect to selected personal, scholastic, and psychological characteristics. The literature has suggested that non-respondents show important differences from respondents and that non-response is difficult to control. Studies which have investigated the differences between respondents and non-respondents have been largely restricted to sample surveys and polls which were mailed to the subjects. Studies using intact groups in a college setting where the instruments were administered during the class period and the effects of non-response were studied were not to be found in the literature.

The subjects in this study included 424 students enrolled in Education 120, Psychology of Education, for the spring semester, 1968-1969. The subjects were asked to complete five instruments all of which were administered during class periods. The five instruments used in the study were as follows:

1. SDQ - A questionnaire designed to solicit demographic information as well as scholastic expectation and accomplishments.
2. Otis - A mental ability test for adults which was administered to each individual in a group.
3. SE - A self-report type instrument consisting of statements about school to which the subject responded according to how strongly he felt the statement did or did not apply to him.
4. SC - The subject chose one of four alternatives to a question which best expressed his feelings about the statement.
5. Anxiety Scale - An instrument by which the presence or absence of anxiety could be indicated and also whether the anxiety would facilitate or debilitate test performance.

On the basis of the response patterns to the five instruments, the subjects were classified as respondents and non-respondents. The respondents included 34 (8.02 percent) males and 181 (42.69 percent) females.

The non-respondents included 43 (10.14 percent) males and 153 (36.08 percent) females. Thirteen subjects (2 males and 11 females) were excluded from the non-respondent group. These subjects appeared to be what Bebbington (1970) referred to as the hard core of non-respondents.

The main objective in the research strategy was to look for patterns by exploring the data. In an effort to determine if there was a pattern in the response of the subjects to the five instruments, the subjects were divided into three groups using the SDQ as the criterion. Three questions were raised: (1) would the subjects who answered all items on the SDQ also complete the other four instruments; (2) would the subjects who omitted some items on the SDQ also fail to respond to one or more of the other four instruments; and (3) would the subjects who did not respond to the SDQ also not respond to the other four instruments. The chi square values computed for the Otis, SE, and Anxiety Scale were significant beyond the 0.05 level of significance; therefore, the hypothesis that the variables were independent in the population that yielded the sample was rejected for the Otis, SE, and Anxiety Scale.

In analyzing the data for sex differences, the male respondents appeared to be much like the males who were non-respondents and the female respondents appeared to be much like the females who were non-respondents. The exceptions to these generalizations were in the educational level

of the father, educational level of the mother, and college housing status. In comparing the educational level of the fathers of the male and female respondents, 70.59 percent of the fathers of the males as opposed to 27.07 percent of the fathers of the females had from 0-12 years of education while 8.82 percent of the fathers of the males and 37.57 percent of the fathers of the females had 16 plus years of education. A similar pattern was also found in the educational level for the mothers of the male and female respondents. The patterns for both the fathers and mothers of the male and female non-respondents were toward a more equal distribution in the two categories of 0-12 years and 16+ years of education. Approximately 30 percent of both fathers and mothers of non-respondents were in these two categories. The college housing status was the third item on the SDQ that was significant in analyzing the data for sex differences. Of the male respondents, 2 (5.88 percent) lived in a fraternity house; 12 (35.29 percent) lived in a dormitory; and 20 (58.82 percent) lived in other housing. Of the female respondents, 58 (32.22 percent) lived in a sorority house; 73 (40.55 percent) lived in a dormitory; and 49 (27.22 percent) lived in housing other than sorority or dormitory.

After combining the male and female respondents and the male and female non-respondents, the data were explored for significant differences between the two groups. The

chi square value was significant at the 0.05 level for six items on the SDQ. These items were: (1) college major; (2) marital status; (3) number of brothers and sisters; (4) highest level of education completed by the father; (5) residential status; and (6) was the subject directly out of high school. The respondents had a greater number of elementary majors and the non-respondents had a greater number of secondary majors than would have been expected from chance. The respondents had fewer single subjects and more married subjects and the non-respondents had more single subjects and fewer married subjects than would have been expected to occur by chance alone. There were more only children among the non-respondents than would have been expected and also, the non-respondents had a smaller percentage of subjects with more than two brothers and sisters.

The level of education of the father, significant for the male respondents and female respondents, continued to be significant. There were more fathers in the 0-12 category and the 16+ category and fewer fathers in the 13-16 category for the respondents than would have been expected. The item on residential status revealed the respondents had a larger number of subjects that were residents of Oklahoma and fewer out-of-state students while the non-respondents had fewer in-state students and more out-of-state students than would have been expected. In answering the question as to whether or not they were directly out of high school,

54.88 percent of the respondents indicated they were directly out of high school while only 36.63 percent of the non-respondents so indicated.

The college grade point averages of the subjects who did not respond to the Otis, SE, SC, and Anxiety Scale were compared to an equal number, drawn at random, from among the subjects who did respond to these instruments. The difference between the means of the grade point average for the respondents and non-respondents to the Otis were significant at the 0.05 level of significance.

In using subjects who had taken the SE but had not responded to the Otis, SC, or Anxiety Scale, the mean of the SE was computed for the three groups. A random sample of equal size was drawn from among the subjects who had not only responded to the SE but had also responded to the Otis, SC, and Anxiety Scale and the mean of the SE was computed for the three groups. In comparing the means of the SE for the respondents and non-respondents to the Otis, the F ratio was significant at the 0.05 level of significance.

Conclusions

From the results of this study, the following conclusions were reached:

1. Of the 424 subjects, only 215 (50.71 percent) responded to all five of the instruments administered. In 1930, Almack reported that a return of 50 percent was normal and it was only when exceptional care was used in the form

or when the subject was of exceptional interest or importance that the investigator would be able to realize a 75 percent return. In 1970, Bebbington reported that a varying proportion of the selected sample, typically between 20 and 50 percent, will have failed to make satisfactory returns. This indicated that the problems of non-response to the sample survey had not been solved during the 40 year period.

2. Thirteen subjects (3.06 percent) failed to respond to any of the five instruments. Robbins (1963) reported 12 percent of his subjects were permanent refusers. Bebbington (1970, p. 170) reported, "It has been suggested that there may exist a hard core of those who will not respond to any survey." In this study the 13 subjects appear to be the hard core of non-respondents who will not respond to any survey.

3. The mean of the college grade point average for all subjects was 2.67. The mean for 342 subjects who responded to the SDQ in its entirety was 2.72; the mean for 51 students who omitted one or more items on the SDQ was 2.53; the mean for 38 subjects who did not respond to the SDQ was 2.40; and the mean for the 13 subjects who did not respond to any of the five instruments was 2.15. The mean of the college grade point averages for 38 subjects chosen at random who responded to the Otis was 2.71 while the mean of the college grade point averages for 38 subjects who did

not respond to the Otis was 2.45 which was significant at the 0.05 level. The intelligence of the individual has been pointed out in the literature. Reuss (1943), Edgerton, et al (1947) and Bebbington (1970) have all reported respondents to be of greater intelligence than non-respondents. The pattern which emerged in this study from the grade point average would collaborate with the findings reported in the literature.

4. The scores earned on the SE were higher for the subjects who responded to the Otis than for those subjects who did not respond to the Otis. The mean of the SE scores for 383 subjects in the study who responded to the SE was 31.07. The mean of the SE scores for 28 subjects who had responded to the Otis was 31.96 as compared to 29.79 for those 28 subjects who had responded to the SE but not to the Otis. The conclusion drawn was that a subject with a higher self expectation as a student will respond more readily to the Otis, an intelligence test, than a student with a lower self expectation as a student. Jones (1966, 1968) reported the SE as one of the variables to be a significant contributor in the prediction of academic achievement.

5. The personal characteristics by which the respondents were found to differ from the non-respondents were as follows:

a. The respondents had a larger percentage of females. The non-respondents had a larger

percentage of males.

b. The respondents had a larger percentage of subjects who had two or more brothers and sisters. The non-respondents had a larger percentage of subjects who were an only child.

c. The respondents had a larger percentage of married subjects. The non-respondents had a larger percentage of single subjects.

d. The respondents had a larger percentage of elementary majors. The non-respondents had a larger percentage of secondary majors.

e. The respondents had a larger percentage of subjects who were residents of Oklahoma. The non-respondents had a larger percentage of out-of-state subjects.

f. The respondents had a larger percentage of subjects who were directly out of high school.

g. The respondents had a larger percentage of the fathers of subjects whose educational level was 16+ years of schooling. The respondents also had a larger percentage of fathers whose educational level was from one to 12 years of schooling. This was the result of differences found among the males and females in the respondent group. Thirty-seven percent of the fathers of the female subjects had attended school for

16 or more years as opposed to 9 percent for the fathers of the male subjects. The level of education for 71 percent of the fathers of the male respondents did not exceed high school as opposed to 27 percent for the fathers of the females.

Parten (1966) reported characteristics such as sex, economic status, and educational level were related to the proportion of replies obtained. Reuss (1943) found, in addition to the individual's intelligence, such factors as the length of stay in college and community and family backgrounds. Bebbington (1970) reported the refusers in his study tended to be the youngest member of rather small families. The differences found in some of the personal characteristics of the respondents and non-respondents in this study led to the conclusion that certain personal characteristics will be found to differ between respondents and non-respondents.

Recommendations

Intellectual ability has appeared to be a significant factor as a determinant of response. If intelligence is viewed as a growing, living process with emphasis on adaptive behavior, of coping with one's environment and being able to organize and reorganize thought and action, new and creative means of measuring this variable needs to

be found. The SE, has been found to be a significant contributor in the prediction of academic achievement. In this study the subjects that responded to the Otis had a significantly higher SE score and a significantly higher grade point average than the non-respondents.

The question is also raised in regard to the SE as to why 93 percent of the subjects responded to the SE but only 61 percent responded to the SC. A clue that the large percentage of non-response to the SC might have involved the subjects lack of perceived self was found in the response pattern to the SDQ. A greater proportion of subjects replied to the items that were clearly known to them. Two of the items on the SDQ asked the subjects to indicate the grade they expected to earn in the mid-term examination and final examination. Not one of the subjects indicated they would make either a D or F in either examination and only 5 percent expected to make a C in the mid-term examination and 3 percent expected to make a C in the final examination. The self expectation for grades suggested the subjects had a high expectation for school tasks but did not have the insight to rank themselves within a group. The SE included questions about school which elicited the subject's expectations for himself in school. The SC required the subject to judge his own ability and rank himself.

The educational level of the fathers and mothers should be explored more fully. This variable was

significant as one way in which respondents were different from non-respondents and also in how male respondents were different from female respondents. The difference in the levels of education for the fathers of the male and female respondents which produced two modes in the educational level for the respondents should be explored. The subjects in this study were representative only of those students who had been admitted to the teacher certification program.

Other studies have suggested that non-respondents may be distinctly different from respondents on sample surveys, polls, and questionnaires. This study has attempted to ascertain from the data available on one particular population, several clues to the hypothesis that non-respondents to the sample survey differ from respondents, personally, scholastically, and psychologically. By analyzing the data available on 424 subjects, all members of an intact group, eight variables were found to be significant at the 0.05 level of significance. Since many studies using the sample survey method choose their sample population very carefully, then use only the data taken from that part of the population which chose to respond, a bias is likely to occur that is neither simple nor predictable.

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A P P E N D I X E S

APPENDIX A

SELF DESCRIPTION QUESTIONNAIRE

NAME _____
Last First Middle

ADVISOR _____

1. Student ID Number _____

For Staff Use Only

2.

3. _____

4. _____

5. _____

6. _____

7. High school grade point average ___ ___ ___

8. Birth date ___/___/___/
mo. day yr.

9. Current hours enrolled ____

10. College major (check one)

___1. Elementary
___2. Social Studies
___3. Language Arts
___4. Foreign Language
___5. Science Education
___6. Math Education
___7. Physical Education
___8. Special Education
___9. Other

11. Approximate size of hometown

___1. 500 or below
___2. 500 to 1000
___3. 1000 to 3000
___4. 3000 to 5000
___5. 5000 to 10,000
___6. 10,000 to 50,000
___7. 50,000 to 100,000
___8. 100,000 to 300,000
___9. 300,000 and above

12. Geographical location of hometown

___1. West Coast
___2. East Coast
___3. Midwest
___4. Southwest
___5. Northwest
___6. North
___7. South
___8. Other

13. Approximate size of high school

___1. 10 to 50
___2. 50 to 100
___3. 100 to 300
___4. 300 to 500
___5. 500 to 1000
___6. 1000 to 2000
___7. 2000 and above

14. Approximate size of graduation class

___1. 10 to 50
___2. 50 to 100
___3. 100 to 200
___4. 200 to 300
___5. 300 to 500
___6. 500 and more

15. Marital status

___1. Single
___2. Married
___3. Divorced
___4. Widowed
___5. Legally separated
___6. Other

16. Number of brothers and sisters

___1. none
___2. one
___3. two
___4. three
___5. four
___6. five or more

17. Your birth order position

___1. first
___2. second
___3. third
___4. fourth
___5. fifth
___6. sixth or more

18. Military status

___1. No military status
___2. Veteran
___3. Reservist
___4. Draft eligible
___5. 4-F
___6. Deferred

19. Highest level of education completed by father

___1. 0-5
___2. 6-9
___3. 10-12
___4. 13-16
___5. 16 or more

20. Highest level of education completed by mother

___1. 0-5
___2. 6-9
___3. 10-12
___4. 13-16
___5. 16 or more

21. College housing status

___1. Live in dormitory
___2. Fraternity or sorority
___3. Private housing
___4. Live at home in Norman
___5. Commute

22. Mid-term exam grade expected

___1. A
___2. B
___3. C
___4. D
___5. F

23. Final exam grade expected

___1. A
___2. B
___3. C
___4. D
___5. F

24. What quarter of your graduating class were you in?

___1. Top 25%
___2. Top 50%
___3. Top 75%
___4. Other

25. Last previous high school attended

___1. Public
___2. Private
___3. Parochial
___4. Other

26. Residential status

___1. In-state student
___2. Out-of-state student
___3. Foreign student

27. What degree are you currently seeking?

___1. BS
___2. BA
___3. Other

Check: (Yes or No)		Yes	No
28.	Are you directly out of high school?	___	___
29.	Are you a transfer student?	___	___
30.	Do you have a scholarship (academic)?	___	___
31.	Do you have a loan?	___	___
32.	Are you currently employed?	___	___
33.	Do you have a car on campus?	___	___
34.	Do you belong to a fraternity or sorority?	___	___
35.	Was O.U. your first choice in colleges?	___	___
36.	Was education your first choice in majors?	___	___
37.	What is your sex?	___Male	___Female

APPENDIX B

LIST OF VARIABLES

Number to Identify Student

Number to Indicate Subject Responded in Full, in Part, or not at all to Self Description Questionnaire

High School Grade Point Average as Reported by Student

Birthday

Hours in Current Enrollment

College Major

Size of Hometown

Geographical Location of Hometown

Size of High School

Size of Graduating Class

Marital Status

Number of Brothers and Sisters

Birth Order

Military Status

Education of Father

Education of Mother

College Housing

Mid-term Grade Expected

Final Exam Grade Expected

Quarter of High School Graduating Class

Kind of High School Attended

Residential Status

Degree Sought

Directly Out of High School or Not

Transfer Student or Resident

On a Scholarship

Have a Loan

Employed

Car on Campus

Belong to Fraternity or Sorority

Was O.U. a First Choice

Was Education a First Choice

Sex

Lecture Number

Discussion Section

Final Grade

Accumulated Grade Point Average

Otis Score

English (ACT)

Mathematics (ACT)

Social Studies (ACT)

Natural Science (ACT)

Composite ACT Score

Self Concept of Ability Score

Self Expectation Inventory Score

Facilitating Anxiety

Debilitating Anxiety

Total Accumulated Hours

Transfer Classification--Other State College or Out-of-State

Classification Status

APPENDIX C

DESCRIPTIVE BREAKDOWN OF SELF DESCRIPTION QUESTIONNAIRE

COLLEGE MAJOR

	Respondents		Non-respondents	
	Males	Females	Males	Females
Elementary	1	88	1	54
Social Studies	6	15	13	10
Language Arts	2	17	1	16
Foreign Language	1	2	2	3
Science Education	12	13	11	17
Math Education	5	4	5	4
Physical Education	3	2	5	1
Special Education	4	24	3	24
Other	(0)	(16)	(1)	(16)
Not reporting	(0)	(0)	(1)	(6)

Group	N	Elem.	Sec.	Spec.Ed.	df	Chi^2
Respondents	199	89	82	28	2	6.0154*
Non-respondents	170	55	88	27		

*Significant at the 0.05 level.

APPROXIMATE SIZE OF HOMETOWN

	Respondents		Non-respondents	
	Males	Females	Males	Females
500 or below	0	4	1	3
500 to 1,000	0	1	2	2
1,000 to 3,000	2	11	1	10
3,000 to 5,000	5	11	2	8
5,000 to 10,000	3	8	3	8
10,000 to 50,000	8	44	7	49
50,000 to 100,000	2	24	7	15
100,000 to 300,000	4	15	5	15
300,000 and above	10	59	13	39
Not reporting	(0)	(4)	(2)	(4)

Group	N	Minus 10M	10M to 100M	Over 100M	df	Chi^2
Respondents	211	45	78	88	2	0.7962
Non-respondents	190	40	78	72		

GEOGRAPHICAL LOCATION OF HOMETOWN

	Respondents		Non-respondents	
	Males	Females	Males	Females
West Coast	0	2	2	2
East Coast	4	6	6	6
Midwest	22	140	27	119
Southwest	0	16	1	18
Northwest	2	0	1	1
North	4	5	3	2
South	2	11	1	4
Other	0	1	2	1

Group	N	Southwest & Midwest	Other Locations	df	Chi^2
Respondents	215	178	37	1	0.1440
Non-respondents	196	165	31		

APPROXIMATE SIZE OF HIGH SCHOOL

	Respondents		Non-respondents	
	Males	Females	Males	Females
10 to 50	1	1	1	1
50 to 100	1	1	1	4
100 to 300	4	14	3	12
300 to 500	4	17	3	9
500 to 1,000	5	24	6	21
1,000 to 2,000	6	74	14	39
2,000 and above	12	50	12	47
Not reported	(1)	(0)	(3)	(20)

Group	N	Less Than 500	More Than 500	df	Chi^2
Respondents	214	43	171	1	0.0116
Non-respondents	173	34	139		

APPROXIMATE SIZE OF GRADUATION CLASS

	Respondents		Non-respondents	
	Males	Females	Males	Females
10 - 50	6	12	10	5
50 - 100	3	19	15	4
100 - 200	3	21	12	3
200 - 300	8	19	14	4
300 - 500	4	39	28	9
500 & above	9	70	54	15
Not reporting	(1)	(1)	(3)	(20)

Group	N	Less Than 200	More Than 200	df	Chi^2
Respondents	213	64	149	1	.1369
Non-respondents	173	49	124		

MARITAL STATUS

	Respondents		Non-respondents	
	Males	Females	Males	Females
Single	18	147	37	125
Married	16	29	5	15
Divorced	0	5	0	1
Widowed	0	0	0	3
Legally separated	0	0	0	0
Other	0	0	0	1
Not reporting	(0)	(0)	(1)	(8)

Group	N	Single	Married or Been Married	df	Chi^2
Respondents	215	165	50	1	6.4418*
Non-respondents	187	162	25		

*Significant at the 0.05 level.

NUMBER OF BROTHERS AND SISTERS

	Respondents		Non-respondents	
	Males	Females	Males	Females
None	4	14	4	15
One	12	70	10	47
Two	10	45	13	45
Three	4	33	6	16
Four	3	13	4	5
Five or more	1	6	3	4
Not reporting	(0)	(0)	(3)	(21)

Group	N	None	One or Two	More Than Two	df	Chi^2
Respondents	215	18	137	60	2	7.7765*
Non-respondents	172	19	115	38		

*Significant at the 0.05 level.

BIRTH ORDER POSITION

	Respondents		Non-respondents	
	Males	Females	Males	Females
First	17	76	21	55
Second	12	77	14	55
Third	3	17	3	19
Fourth	0	8	0	2
Fifth	1	2	2	0
Sixth or more	1	1	0	1
Not reporting	(0)	(0)	(3)	(21)

Group	N	1st. Born	2nd. Born	Other	df	Chi^2
Respondents	215	93	89	33	2	0.0645
Non-respondents	172	76	69	27		

MILITARY STATUS

	Respondents		Non-respondents	
	Males	Females	Males	Females
No military status	4	178	4	129
Veteran	4	1	3	0
Reservist	2	0	5	0
Draft eligibility	1	0	3	0
4-F	2	0	1	0
Deferred	21	2	24	0
Not reporting	(0)	(0)	(3)	(20)

Group	N	Veteran or Reserve	Other	df	Chi^2
Male Respondents	34	6	28	1	0.0016
Male Non-respondents	40	8	32		

HIGHEST LEVEL OF EDUCATION
COMPLETED BY FATHER

	Respondents		Non-respondents	
	Males	Females	Males	Females
0 - 5	-	1	1	1
6 - 9	2	9	2	5
10 - 12	22	39	10	28
13 - 16	7	64	15	63
16 plus	3	68	12	34
Not reporting	(0)	(0)	(3)	(22)

Group	N	0-12	13-16	16+	df	Chi^2
Respondents	215	73	71	71	2	6.3711*
Non-respondents	171	47	78	46		

*Significant at the 0.05 level.

HIGHEST LEVEL OF EDUCATION
COMPLETED BY MOTHER

	Respondents		Non-respondents	
	Males	Females	Males	Females
0 - 5	0	4	1	0
6 - 9	5	1	1	1
10 - 12	20	63	12	52
13 - 16	8	89	16	58
16 plus	1	24	10	20
Not reporting	(0)	(0)	(3)	(22)

Group	N	0-12	13-16	16+	df	Chi^2
Respondents	215	93	97	25	2	2.7936
Non-respondents	171	67	74	30		

COLLEGE HOUSING STATUS

	Respondents		Non-respondents	
	Males	Females	Males	Females
Dormitory	12	73	16	41
Fraternity or Sorority	2	58	9	57
Private housing	13	14	13	18
Live at home in Norman	3	24	2	15
Commute	4	11	2	12
Not reporting	(0)	(1)	(1)	(10)

Group	N	Greek	Dorm	Other	df	Chi^2
Respondents	214	60	85	69	2	4.0944
Non-respondents	185	66	57	62		

MID-TERM EXAMINATION GRADE EXPECTED

	Respondents		Non-respondents	
	Males	Females	Males	Females
A	18	71	16	52
B	12	99	21	75
C	3	10	3	4
D	0	0	0	0
F	0	0	0	0
Not reporting	(1)	(1)	(3)	(22)

Group	N	A	B or C	df	Chi^2
Respondents	213	89	124	1	0.1598
Non-respondents	171	68	103		

FINAL EXAMINATION GRADE EXPECTED

	Respondents		Non-respondents	
	Males	Females	Males	Females
A	18	71	19	56
B	14	101	21	70
C	1	8	0	5
D	0	0	0	0
F	0	0	0	0
Not reporting	(1)	(1)	(3)	(22)

Group	N	A	B or C	df	Chi^2
Respondents	213	89	124	1	0.1670
Non-respondents	171	75	96		

QUARTER OF HIGH SCHOOL
GRADUATING CLASS

	Respondents		Non-respondents	
	Males	Females	Males	Females
Top 25%	19	126	21	85
Top 50%	8	32	14	34
Top 75%	4	9	4	7
Other	0	11	1	5
Not reporting	(3)	(3)	(3)	(22)

Group	N	Top 25%	Other	df	Chi^2
Respondents	209	145	64	1	2.2904
Non-respondents	171	106	65		

LAST PREVIOUS HIGH SCHOOL ATTENDED

	Respondents		Non-respondents	
	Males	Females	Males	Females
Public	31	169	38	124
Private	1	8	1	6
Parochial	2	1	1	1
Other	0	1	0	1
Not reporting	(0)	(2)	(3)	(21)

Group	N	Public	Other	df	Chi^2
Respondents	213	200	13	1	0.0141
Non-respondents	172	162	10		

RESIDENTIAL STATUS

	Respondents		Non-respondents	
	Males	Females	Males	Females
In-state students	21	143	24	87
Out-of-state	12	38	15	44
Foreign students	0	0	1	0
Not reporting	(1)	(0)	(3)	(22)

Group	N	In-state	Other	df	Chi^2
Respondents	214	164	5	1	6.4008*
Non-respondents	171	111	60		

*Significant at the 0.05 level.

DEGREE SOUGHT

	Respondents		Non-respondents	
	Males	Females	Males	Females
BS	18	114	21	74
BA	13	53	13	46
Other	3	12	5	11
Not reporting	(0)	(2)	(4)	(22)

Group	N	BS	BA	Other	df	Chi^2
Respondents	213	132	66	15	2	1.6479
Non-respondents	170	95	59	16		

DIRECTLY OUT OF HIGH SCHOOL

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	21	97	19	44
No	13	84	21	88
Not reporting	(0)	(0)	(3)	(21)

Group	N	Yes	No	df	Chi^2
Respondents	215	118	97	1	12.7918*
Non-respondents	172	63	109		

*Significant at the 0.05 level.

TRANSFER STUDENT

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	8	55	14	37
No	26	126	26	95
Not reporting	(0)	(0)	(3)	(21)

Group	N	Yes	No	df	Chi^2
Respondents	215	63	152	1	0.0055
Non-respondents	172	51	121		

SCHOLARSHIP

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	4	11	3	12
No	30	169	37	120
Not reporting	(0)	(1)	(3)	(21)

Group	N	Yes	No	df	Chi^2
Respondents	214	15	199	1	0.3897
Non-respondents	172	15	157		

L O A N

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	9	20	6	19
No	25	161	34	113
Not reporting	(0)	(0)	(3)	(21)

Group	N	Yes	No	df	Chi^2
Respondents	215	29	186	1	0.0871
Non-respondents	172	25	147		

CURRENTLY EMPLOYED

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	11	32	16	30
No	23	149	22	102
Not reporting	(0)	(0)	(4)	(21)

Group	N	Yes	No	df	Chi^2
Respondents	215	43	172	1	2.6615
Non-respondents	170	46	124		

CAR ON CAMPUS

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	22	55	25	41
No	13	126	15	90
Not reporting	(0)	(0)	(3)	(22)

Group	N	Yes	No	df	Chi^2
Respondents	216	77	139	1	0.3561
Non-respondents	171	66	105		

FRATERNITY OR SORORITY

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	6	73	10	63
No	27	108	30	69
Not reporting	(1)	(0)	(0)	(21)

Group	N	Yes	No	df	Chi^2
Respondents	214	79	135	1	1.2197
Non-respondents	172	73	99		

WAS O.U. FIRST CHOICE?

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	21	125	26	94
No	13	54	14	37
Not reporting	(0)	(2)	(3)	(22)

Group	N	Yes	No	df	Chi^2
Respondents	213	146	67	1	0.1185
Non-respondents	171	120	51		

WAS EDUCATION FIRST CHOICE?

	Respondents		Non-respondents	
	Males	Females	Males	Females
Yes	18	113	17	76
No	16	68	23	56
Not reporting	(0)	(0)	(3)	(21)

Group	N	Yes	No	df	Chi^2
Respondents	215	131	84	1	1.8448
Non-respondents	172	93	79		

APPENDIX D

COMPARISON OF MEANS BY ANALYSIS OF VARIANCE

COLLEGE GRADE POINT AVERAGE OF GROUPS TO THE OTIS

(N = 38)

Source	df	SS	MS	F
Groups	1	1.2740	1.2740	4.4174*
Residual	74	21.3425	0.2884	
Total	75	22.6165		

*Significant at the 0.05 level.

$$\text{F-max} = \frac{0.2915}{0.2700} = 1.0796$$

COLLEGE GRADE POINT AVERAGE OF GROUPS TO THE SE

(N = 29)

Source	df	SS	MS	F
Groups	1	0.0310	0.03	0.0468
Residual	27	17.4000	0.64	
Total	28	17.4310		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{0.3210}{0.2789} = 1.1509$$

COLLEGE GRADE POINT AVERAGE OF GROUPS
TO THE SC

(N = 152)

Source	df	SS	MS	F
Groups	1	.09	.09	0.1551
Residual	150	86.66	0.58	
Total	151	86.75		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{0.2898}{0.2803} = 1.0338$$

COLLEGE GRADE POINT AVERAGE OF GROUPS
TO THE ANXIETY SCALE

(N = 42)

Source	df	SS	MS	F
Groups	1	0.60	0.60	1.20
Residual	82	40.83	0.50	
Total	83	41.43		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{0.6452}{0.3268} = 1.9742$$

OTIS SCORE OF GROUPS TO SE

(N = 20)

Source	df	SS	MS	F
Groups	1	93.0250	93.02	0.98
Residual	38	3594.9500	94.60	
Total	39	3687.9750		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{102.5000}{77.2475} = 1.3268$$

OTIS SCORE OF GROUPS TO SC

(N = 135)

Source	df	SS	MS	F
Groups	1	90.1333	90.13	1.27
Residual	268	18975.1406	70.80	
Total	269	19065.2739		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{73.3324}{67.2241} = 1.0908$$

OTIS SCORE OF GROUPS TO ANXIETY SCALE

(N = 28)

Source	df	SS	MS	F
Groups	1	120.0714	120.0714	1.5832
Residual	54	4095.3572	75.9388	
Total	55	4215.4286		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{95.4017}{50.8609} = 1.8757$$

SE SCORE OF GROUPS TO OTIS

(N = 28)

Source	df	SS	MS	F
Groups	1	66.4464	66.4464	4.6618*
Residual	54	769.6786	14.2533	
Total	55	836.1250		

*Significant at the 0.05 level.

$$\text{F-max} = \frac{15.4540}{12.0344} = 1.2841$$

SE SCORE OF GROUPS TO SC

(N = 124)

Source	df	SS	MS	F
Groups	1	6.4515	6.45	0.51
Residual	246	3092.8227	12.57	
Total	247	3099 2742		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{13.3919}{11.5501} = 1.1594$$

SE SCORE OF GROUPS TO ANXIETY SCALE

(N = 15)

Source	df	SS	MS	F
Groups	1	0.0333	0.0333	0.0026
Residual	28	351.3334	12.5476	
Total	29	351.3667		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{12.5600}{10.8622} = 1.1563$$

SC SCORE OF GROUPS TO OTIS

(N = 21)

Source	df	SS	MS	F
Groups	1	2.3810	2.3810	0.0458
Residual	40	2078.1905	51.9547	
Total	41	2080.5715		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{57.7596}{41.2018} = 1.4018$$

FACILITATING ANXIETY SCALE SCORE OF GROUPS TO THE OTIS

(N = 25)

Source	df	SS	MS	F
Groups	1	1.2800	1.2800	0.0725
Residual	48	864.6400	17.6457	
Total	49	865.9200		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{22.5856}{12.0000} = 1.8821$$

FACILITATING ANXIETY SCALE SCORE OF GROUPS TO THE SC

(N = 120)

Source	df	SS	MS	F
Groups	1	11.70	11.70	0.57
Residual	238	4847.69	20.37	
Total	239	4859.39		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{21.6499}{18.7475} = 1.1548$$

DEBILITATING ANXIETY SCALE SCORE OF GROUPS TO THE OTIS

(N = 25)

Source	df	SS	MS	F
Groups	1	3.9200	3.9200	0.1161
Residual	48	1619.7600	33.7450	
Total	49	1623.6800		

Not significant at the 0.05 level.

$$\text{F-max} = \frac{36.0000}{28.7904} = 1.2504$$

DEBILITATING ANXIETY SCALE SCORE OF GROUPS TO THE SC

(N = 120)

Source	df	SS	MS	F
Groups	1	44.2042	44.2042	1.0318
Residual	238	10195.8959	42.8390	
Total	239	10239.8959		

Not significant at the 0.05 level

$$\text{F-max} = \frac{42.9332}{42.0308} = 1.0214$$