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AS A RESULT OF EMPLOYING COMPUTER-ASSISTED
COLLEGE SELECTION.

The Ohio State University, Ph.D., 1970
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A STUDY OF ATTITUDES TOWARD THE GUIDANCE DEPARTMENT
AND THE COLLEGE-COUNSELING PROCESS AS A RESULT OF
EMPLOYING COMPUTER-ASSISTED COLLEGE SELECTION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
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* * * * *

The Ohio State University
1970

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CHAPTER I
INTRODUCTION

In view of spiraling college enrollments and increasing competition for available college space, it is conceivable that in certain communities, the press by parents is such that ever increasing demands will be placed upon the high school counselor for pre-college counseling duties.1 Mathewson, in discussing the counselor's role, commented that in many communities "the stress in the guidance program of the senior high school seems to be definitely on college achievement and placement."2

Last fall approximately one and one-half million students made the transition from high school to college. Some educators predict that in the near future, nearly 100 per cent of every high school graduating class will continue on to some form of higher education.

Economic demands for higher levels of education increase almost daily. With the doubling of knowledge every ten years and the rapid expansion of technology,


1
there appears to be an almost unlimited need for college-trained persons and this means more students will be requesting assistance from the high school guidance counselor in obtaining the necessary education to meet this demand.

However, it has been stated by some authors that the area of pre-college guidance and counseling represents a major paradox between counselor education and counselor practice. Adams reflects part of this paradox by stating, "counseling the college-oriented student is probably a hit-and-miss type of counseling as any which is being done today." Hammond states that "in the majority of cases the college choice is made in a haphazard manner." Results of a survey conducted during the spring of 1966 by a subcommittee of the American Association of Collegiate Registrars and Admission Officers High School-College Relations Committee suggests that the nation's students have been given far too little accurate, meaningful information about the higher education experience as they make the transition from high school student to college freshman.

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5 William R. Siddoway, "Information Needs of Students During the High School Senior to College Freshman Transition," College and University, XLII (Spring, 1967), p. 357.
Many students heartily agree with the above authors regarding their high school college-counseling experience. Scott reported that when he surveyed students at the University of Washington as to where they received the worst advice concerning their college choice, the students overwhelmingly named their high school guidance counselor.  

However, it is important to note that Gutsch and Milner attempted to repeat the research techniques of Scott but were unable to do so because it was not possible to obtain a copy of the questionnaire which was used in this study. Therefore, the investigators constructed a new questionnaire which would reveal student attitudes toward the college counseling process and administered it to 1,049 college freshmen at the University of Southern Mississippi. The authors concluded that they could not agree with the findings of the Scott study because the attitudes of college students toward the services they received from their respective high school counselors appeared favorable and did, in fact, show that approximately two-thirds of the participants who received guidance services rated these services as excellent or good.

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Bentley and Salter surveyed 270 college freshmen at a northeastern university in an attempt to explore the activities of their high school counselors in college admissions and report that the majority of respondents felt that their experience with high school counselors was a useful and helpful one. In commenting on the Scott study, the investigators felt that their findings could not support the Scott study in any way.

While we are not able to generalize from the Scott study and state that a large portion of college-bound students are dissatisfied with the guidance department and the college-counseling process, it is known that few counselor education programs prepare counselors to handle this arduous task of selection. Most counselor-educators would agree that one of the major goals of the guidance department is to assist the student in the selection of appropriate choices and, therefore, it would appear that with an ever increasing number of students continuing on to higher education, the smooth transition from high school senior to college freshman is quickly becoming an important function of the guidance counselor. Consequently, a study of student attitudes toward the guidance department and the college-counseling process is a significant area for exploration due to the increasing demand for this type of assistance from the

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At the present time, the attitudes of clients of various veterans, rehabilitation, college and community counseling services have been the subject of numerous investigations but the reactions of secondary school students to high school guidance programs and the college-counseling process have not been thoroughly explored. One of the first groups to suggest the importance of learning the needs and feelings of the student were the proponents of progressive education. The measurement of attitude is rapidly becoming a vital part of our educational system. Many educators have discovered that the school's interest in student attitudes can result in an increase in communication and in the upgrading of the system.

For the college-bound student, one of the most significant experiences which shapes his attitudes toward the guidance area is the assistance he receives during the college counseling process.

For the counselor who has not been exposed to the pre-college guidance during his training program and with the opening of approximately one new college a week somewhere in the United States, the matching of student with an appropriate school becomes an immense task. It has been noted that for many students, there may be as many as fifty or more colleges which adequately meet the student's requirements. However, the average student will usually only
consider several of these fifty and most students will never consider those particular schools which ideally match his college profile. Due to the crush of college information which is in a constant state of flux, high school guidance counselors are continually seeking new methods of providing better college-counseling services for their students. Computer-assisted college selection is one of the newer methods currently being investigated.

The basic concept undergirding computer assistance in college selection rests in the belief that a guidance department is not able to handle adequately all pertinent information pertaining to the 3,000 institutions of higher learning which are available to students in the United States. In addition, computer-assisted college selection is based on the ideal that each child is unique. No student has quite the same combination of skills, interests, family circumstances, likes and dislikes. It is believed that each college is also unique. Each college has its own atmosphere and attitudes, its own academic and social way of life. In total, the purpose of computer-assisted college selection is to match the unique personality of the student to the unique personality of the college, extend the student's horizons, encourage early research concerning college selection, increase counselor effectiveness by providing the time necessary for counseling and reduce a large portion of the clerical tasks involved in maintaining masses of college information.
Counselor educators and guidance counselors are aware that new and complex situations are constantly being evolved and these situations require new and advanced solutions. In addition, it is recognized that attitudes resulting from the very important area of college-counseling is a very significant field of investigation as counselee satisfaction is an important factor in any overall evaluation of counseling effectiveness. Counselee attitudes toward the counseling experience are most crucial since in the long run it is the counselee who must determine whether he has profited as a result of counseling.

**Statement of the Problem**

The purpose of this investigation was to determine the influence of computer-assisted college selection on the attitudes of college-bound students (1) toward the high school guidance program in general and (2) toward the college counseling process specifically. It was a secondary aspect of this study to examine these attitudes as they relate to selected factors of college-bound students. Attitudes toward high school were also investigated.

In view of the above statement, the following null hypotheses were proposed:

1. There will be no significant difference on pre-test and post-test mean attitude scores toward the guidance department between the experimental
group which uses computer-assisted counseling in college selection and the control group which does not use computer-assisted counseling in college selection.

2. There will be no significant difference on pre-test and post-test mean attitude scores toward the guidance department between the experimental group which uses computer-assisted college selection and the control group which does not use computer-assisted college selection when I. Q., sex of the student, sex of the counselor and religious affiliation are taken into consideration.

3. There will be no significant difference in perceptions toward the college counseling process on the part of the experimental group which uses computer-assisted college selection and on the part of the control group which does not use computer-assisted college selection after the treatment has been administered.

4. There will be no significant difference on pre-test and post-test mean attitude scores toward high school between the experimental group which uses computer-assisted counseling in college selection and the control group which does not
use computer-assisted counseling in college selection.

**Importance of the Study**

This study was important for the following reasons:

1. Knowledge is true only for a limited time and it must be constantly and continuously revised and updated. Therefore, education can use unlimited investments of resources of all types, including the most advanced technologies that are appropriate to the constantly enlarging tasks of our schools. With the increasing number of students continuing on to higher education, we must determine improved methods of providing accurate and up-to-date information. This study may provide us with a new method of improving the college counseling process and, as an additional result, the student's attitude toward the guidance department.

2. The youth of our nation constitute our greatest resource. They deserve our very best efforts in communicating to them vital information about the critical transition from high school senior to college freshman. At the present time, we are faced with a 50 per cent attrition rate for those students who do attempt to go to college. We are not cognizant of all the reasons for such a high drop-out rate, but we do know, however, that inappropriate original choice of a college contributes to this problem. This study may yield a method of making more appropriate choices.
3. This study may serve as a stimulus to further research in the area of the importance of student attitudes toward the guidance department and the college counseling process.

**Definition of Terms**

**College-Counseling:**--this process is defined as any assistance provided by the guidance staff to the student in making a college choice.

**College-Bound Student:**--operationally, a college-bound student is defined as any high school senior who, at the end of the junior year, demonstrated the intention of continuing on to higher education by participating in the Scholastic Aptitude Test program and who, in addition, expresses to the counselor the desire to continue on to higher education.

**Attitude Toward the Guidance Department:**--operationally defined, attitude toward guidance is the score the student receives on the Barker scale **Attitudes Toward a School Guidance Program.**

**Attitude Toward the College Counseling Process:**--this concept is defined as the score the student receives on the scale developed for this study, **Perceptions of the College Counseling Process.**
Attitude Toward High School: operationally defined, attitude toward high school is the score the student receives on Remmers' scale, High School Attitude Scale.

Limitations

A limitation of this investigation was that of geographical scope. The sample for this study was drawn from students located in the Middle Atlantic states. In this particular section of the country, many communities consider college counseling to be one of the most important functions of the guidance department and a department's proficiency in this area has a great influence on the attitudes of the college-bound population. Therefore, the results of this study would lend themselves to generalization toward similar college-oriented communities.

A second limitation connected with this study may be attributed to the scale Perceptions of the College Counseling Process which attempts to determine attitudes toward the college counseling process. This scale was submitted to counselor educators and high school guidance counselors in order to establish content validity but no attempt will be made to establish reliability.

At this time, the treatment being employed in this study to aid the student in college selection is only one of the many methods which has reached the majority of the school systems. In the very near future, however, we can expect newer methods of assisting the student in college
selection which may have a different effect on student
attitudes toward the guidance department and the college
counseling process.

Organization of the Remainder
of the Dissertation

The foregoing materials have comprised Chapter I
of this study, Introduction and Statement of the Problem.
The remaining chapters in the study are II, Review of Re­
lated Literature; III, Research Design; IV, Findings and
Discussion; and V, Conclusions and Implications.
CHAPTER II

REVIEW OF THE LITERATURE

As a result of the American ideal of maximizing the educational and social potentialities of all its citizens, the concept of guidance and counseling has become a strong force in the educational setting. Guidance and counseling is a unique contribution of the American school system to education and its focus on the worth of the individual is a direct outgrowth of well-established values.

However, there are other factors in our society which are accenting the importance of this field and are acting to promote its growth; for example, rapid technological change. Increasing technological advancements have brought with it a need for a corresponding increase in knowledge and skills in order to handle new occupations and our future society. Therefore, with the increased demand for higher education, the importance of college counseling has grown rapidly and the college counseling process has become one of the most important functions of the high school guidance counselor. As a direct result of the increased importance placed on the college counseling process, many guidance departments find that their program is evaluated, in large part, by the students, parents and administration.
on this single criterion. Therefore, the measurement of attitudes of students toward the guidance department and the college counseling process is a sound area for investigation.

The purpose of this chapter is to present relevant theoretical and research literature supporting the need and feasibility of this study. The presentation is organized in two main categories. The first section deals with attitudes and the various literature which is pertinent to this study.

The second section of this chapter is devoted to an overview of research in the field of computer technology and the ideas being advanced or tested for the utilization of this tool in guidance and counseling. This section is particularly relevant in that this study is concerned with attitude change toward the guidance department and the college counseling process as a result of employing computer-assisted college selection. Many counselor educators and technicians view this technique as one of the most feasible methods of overcoming prodigious student loads and increasing the efficiency of the guidance department and the college counseling process.

**Development of Studies in Attitudes**

Since the early part of the century, researchers have been attempting to measure attitudes accurately. To
be able to understand how attitudes can be measured, we first need to understand the concept of attitude.

Many definitions of social attitudes have been proposed. These definitions seem to have a common theme. This theme is the concept of attitude as a consistency among responses to a specified set of stimuli, or social objects.⁹

For example, Krech and Crutchfield view attitude as

...an enduring organization of motivational emotional, perceptual and cognitive processes with respect to some aspect of the individual's world.¹⁰

Allport, after reviewing many early definitions of attitude, concluded that

an attitude is a mental and neutral state of readiness exerting a directive influence upon the individual's responses to all objects and situations with which it is related.¹¹

In their book, *A Practical Introduction to Measurement and Evaluation*, Remmers, Gage and Rummel agree with Allport's definition by stating that an attitude may be


defined as

an emotionalized tendency, organized through experience, to react positively or negatively toward a psychological object.12

Thurstone, a pioneer in the field of attitude measurement, expands the definitions of Allport, Remmers, Gage and Rummel by stating that attitudes may be also formed by reacting to stereotypes. Experience is not a necessary concomitant in order to form an attitude. He states that attitude is

the sum total of a man's inclinations and feelings prejudice or bias, preconceived notions, ideas, fears, threats, and convictions about any specific topic.13

However, while Thurstone expands the source of the development of attitudes, he agrees that it is a consistent response.

Additional definitions have been postulated by Doob, Fuson and Campbell. For Doob, an attitude refers to an implicit response that is both anticipatory and mediating in reference to patterns of overt responses, and that is considered socially significant in the individual's society.14


Fuson defines an attitude as the probability of occurrence of a defined behavior in a defined situation.\(^\text{15}\) Campbell suggests that a social attitude is evidenced by consistency in response to social situation.\(^\text{16}\)

It is apparent from these examples that the concept of attitude implies a consistency or predictability of responses. An attitude governs, mediates, or predicts, or is evidenced by a variety of responses to some specified set of social objects or situations.

Campbell has summarized this view neatly in presenting an operational definition of attitude as

> an individual's social attitude is an enduring syndrome of response consistency with regard to a set of social objects.\(^\text{17}\)

The development of the concept of attitude has been of great importance to educators because of its great influence in the educational process. Lindsey states that attitudes are important to the counselor because they may interfere with the psychological processes such as learning, remembering and perception.\(^\text{18}\) For example, Newcomb found


\(^{17}\)Ibid. p. 31.

that errors on an information test were related to the respondent's attitude.\(^\text{19}\)

In summary, it might be said that it is the charge of the school to study attitudes as well as attempt to change attitudes.

**Development of attitude scale measurement**

Thurstone states that the degree of positive or negative affect associated with some psychological object is important to understanding the concept of attitude.\(^\text{20}\)

In working on the problem of attitude measurement, the concept of positive and negative affect is very significant.

In the 1920's, Thurstone published two important articles in which he developed his laws of comparative judgment.

In discussing Thurstone's contribution, Edwards states:

> the law of comparative judgment is important because it provided a rationale for the ordering of stimuli along a psychological continuum, even in those cases where no known physical continuum to which the values of the stimuli on the psychological continuum might be related. The law of comparative judgment thus made possible


The quantitative investigation of all kinds of values and subjective experience.\textsuperscript{21}

The Thurstone technique of attitude measurement requires thirty or more judges to sort into eleven categories a large number of statements expressing opinions concerning an attitude object. At one extreme is the most favorable attitude while at the opposite end is the most unfavorable attitude; the neutral position is at the center. The median scale value assigned by the judges to each of the statements in the collection is then determined. Only the relevant statement as determined by the judges is retained. Because this method of constructing a scale to measure attitudes requires a great deal of labor, it is impossible to build scales measuring all possible significant attitude objects. Hence other types of scales have been developed.

Remmers developed generalized or master attitude scales to measure attitudes toward any one of a class of attitude objects such as the High School Attitude Scale which is employed in this study. The statements in the general attitude scale are not related specifically to any single attitude object; but if the name of the appropriate object is written in at the head of the scale, the statements can be interpreted meaningfully for any

representative of the class of objects for which the scale is intended. The scale values of Remmers' scales are determined by Thurstone's equal-appearing intervals techniques. However, while in the Thurstone scale the statements are arranged in random order, in the Remmers' scales they appear in order of decreasing favorableness. This arrangement greatly decreases the time and labor required for scoring without affecting the accuracy of the measurement.

A third type of attitude scale was developed by Likert. Compared to either the Thurstone or the Remmers' scales, the Likert-type scales are fairly easy to construct. First are the listed statements that reflect favorable and unfavorable attitudes about the attitude object. The subjects respond on a five-point scale. The scales are usually scored by assigning values from 1 to 5. Five is usually at the favorable end of the scale. A subject's scores is the total of the values indicated. Likert-type scales can be constructed in a relatively short time, require no judges, and can be scored rapidly. The reliability and validity obtained by his scale are comparable to the Remmers and Thurstone scale.

\[\text{\bibitem{22}}\text{Remmers, Gage, and Rummel, op. cit., p. 134.}\]
\[\text{\bibitem{23}}\text{Ibid., p. 315.}\]
\[\text{\bibitem{24}}\text{Ibid., p. 315.}\]
Methods have also been devised for measuring attitude intensity and for analyzing a set of attitudes into common factors and latent variables.

One of the problems raised in the measurement of attitudes is the difficulty in validation. Here the problem of validity is the correspondence between what the subject describes as his attitudes and his overt behavior. The problem of the reliability of any scale can usually be handled successfully, since care in the selection and phrasing of the items usually gives high reliabilities by both the split-half and test-retest methods.

Difficulties also arise in survey research, particularly in sampling. These problems are discussed at length in Sampling Opinions, An Analysis of Survey Procedure, by Stephan and McCarthy.


Many authors such as Edwards\textsuperscript{29} and Remmers,\textsuperscript{30} deal with the construction of attitude scales which the reader can consult for a further discussion of this topic.

Client Reaction to the Guidance Program and the College Counseling Process

There have been many investigations concerned with client reaction to the counseling process and Zeiders, in an unpublished doctoral dissertation, has thoroughly investigated this area.\textsuperscript{31} The following paragraphs borrow heavily from this investigation.

In general, many of the early studies conducted in the 1930's and 1940's were unidimensional in that they were concerned with the reactions of clients to counseling or various guidance services. One of the earliest studies in this area was attempted by Hawkins and Fialkin in 1935 and was concerned with the reactions of unemployed individuals toward guidance.\textsuperscript{32}

\begin{itemize}
\item \textsuperscript{29}A. L. Edwards, \textit{op. cit.}, pp. 120-219.
\item \textsuperscript{30}Remmers, Gage, and Rummel, \textit{op. cit.}, pp. 307-320.
\end{itemize}
Typical of the 1940's were studies of the reactions of veterans to counseling services such as the study conducted by Ward.\textsuperscript{33} The responses of clients in these early studies were generally favorable. They viewed the services they had received as being beneficial.

In the 1950's, the multi-faceted nature of the problem of measuring client reactions to guidance was recognized. Kamm constructed a "consumer reaction" inventory to evaluate student attitudes toward college personnel services.\textsuperscript{34} Through a study of the proportion of favorable and unfavorable responses to sixty questions, he determined certain strengths and weaknesses insofar as students were concerned. The "yes-no" responses to the sixty questions were to be converted to percentages, using a base "N" the total number of students participating. If only the responses of a sub-hypen group are considered, the number of students in that group would be used in computing the percentages. This procedure suggests a practical approach to amplifying uses, values, and reactions of high school students in various curricular groups toward guidance services.


At the same time, Sagaser conducted a similar study with college students, but with a slightly different emphasis. He sent a questionnaire to 1,212 students in eight colleges and universities asking (1) what they desired of counseling and, (2) how they viewed the counseling services. With reference to the response to question number two, the major criticism offered by 12 per cent of the sample was that counselors were too impersonal and not interested in the students. However, there was only a forty-one per cent return of the questionnaires in this study.

Jensen made an assessment of pupil reaction to the guidance program in the Phoenix Union High Schools during the 1952 school year. His decision to use student feeling as the criterion was based on the belief that it provides an index of what students think of counseling and how they believe their self-understanding and adjustment are affected by it. Jensen and his co-workers used a 20 per cent random sample of 8,000 seventh-through-twelfth-grade boys and girls in the seven high schools in Phoenix. It was found that over 50 per cent believed counselors had helped them "very much" or "some." Eighty-one per cent felt


they had received positive help in understanding their abilities, interests, ambitions, and personality. Sixty per cent indicated they had received help in making progress toward realistically chosen goals such as college.

Fifield and Watson conducted a nine-year follow-up (1954-1963) study of 8,500 high school graduates in order to investigate the educational and occupational experiences of the graduates and to secure their attitudes pertaining to the general effectiveness of the program provided by the students' respective high schools. In the area of guidance, the students felt that guidance counselors gave the least amount of help in assisting the student in deciding to go to college and in obtaining admission to college. The investigators concluded that the guidance program proved to be a weak part of the high school program as viewed by the respondents.

Another early research study dealing with the measurement of student attitudes toward guidance services was Form's investigation of "Student Attitudes towards Counseling and the Counseling Center at Michigan State University." This was one of the first times that a


scale on student attitudes toward counseling was developed. Form states:

the operation of a counseling organization is probably more affected by the prevailing climate of opinion toward it than is the case for an academic department. The effectiveness of counseling by its very nature depends upon a willingness on the part of students to use it. This, in turn, reflects the attitudes that students have concerning the value of counseling. Thus it is important for personnel agencies to know the prevailing attitudes, sentiments, and prejudices that students have toward them to do effective work. A counseling organization or a counseling center is effective to the degree that it is positively valued by the student body.  

Of the 544 students who were surveyed, a large percentage had favorable attitudes toward counselors and the Michigan State counseling center. An interesting finding in this study was that 40 per cent of the students surveyed had never used the counseling center for assistance; in other words, the positive attitudes of many of the non-users of the center were derived from the experiences of others, i.e., from the prevailing climate of opinion.

Tyler sufficiently summarized the results of studies conducted in the 1950's by stating

the unanimity of the results in all these studies suggests that no more evidence of this over-all sort is needed to demonstrate that clients like counseling. It would seem more profitable to design research that would permit comparisons of subgroups and identify factors related to degrees of favorableness of reaction.

39 Ibid., p. 84.

In 1962, Roemmich and Schmidt, after surveying 2,719 high school seniors in San Diego, reported that of the 1,666 students who responded to the question, "Who assisted you in selecting college?" five per cent named the high school counselor.\(^41\) In the same year, a similar study by Kerr, in which 1,350 high school seniors in Iowa were studied, reported results that indicated that the counselor, though not seen as an important influence in the college decision, nevertheless was seen as an important source of information about colleges.\(^42\) In both studies, the parents were viewed as the most influential in college selection.

Bentley and Salter investigated this same question at a later date and noted a discrepancy between their finding and those of the earlier studies of Roemmich, Schmidt and Kerr.\(^43\) Their investigation found that 58 per cent of college freshmen named their high school counselor as the most important person who influenced their college decision.


\(^{43}\)J. C. Bentley and S. Salter, "The High School Counselor and the College Admission Officers: A Symbiotic Relationship?" College and University, XLII (Spring, 1967), pp. 292-300.
The investigators concluded that the counselor seems to have replaced the parent as the most fruitful source of information about colleges and is overtaking the parent as the one who most influences the student in his college decision. This trend was attributed to the current scramble for college admission. The authors state:

Can high school counselors actually come to know a great number of colleges sufficiently well so that they can recommend that students attend a certain college? . . . work on climate factors has demonstrated that a college campus is much more than an average CEEB score. How can the counselor keep up to date regarding the kinds of colleges his students are most likely to choose? 44

The investigators concluded that the answers to the above questions are crucial because as ever-increasing numbers of students compete for limited places in freshmen classes, to whom will the student turn in order to receive assistance in the college admission process?

A forty-five item pupil opinion type questionnaire was constructed by Gibson in order to evaluate five areas of the guidance program. 45 Twelve high schools participated and 905 students were administered the questionnaire. While 93 per cent of the sample were favorable to the idea of guidance programs and the contribution it makes to the

44 Ibid., pp. 292-300.

instructional program, 43 per cent were not sure of their activities and 25 per cent felt the program had not assisted them personally. Gibson concluded that while counselors were not effectively communicating the services of the guidance program a large majority of students valued the guidance program.

In a more recent study Campbell reported the results of a national survey which included 7,000 students.\footnote{Robert E. Campbell, "Vocational Guidance in Secondary Education: Results of a National Survey," The Center for Vocational and Technical Education, (Columbus: Ohio State University, December, 1968), pp. 65-66. (Mimeographed.)} In response to a question asking students to rate the effectiveness of their school guidance program, 19 per cent of the students reported that their school guidance program was of "little or no help;" 39 per cent said they were "somewhat helpful," and 40 per cent said it was "very helpful." In general, the majority of the students were not overly enthusiastic about the assistance received from their high school guidance program.

In a survey of students one year and five years after they graduated from high school, students who participated in Flanagan's Project Talent were asked to evaluate their high school experience. One item asked them to complete the sentence, "The main thing I believe I needed
which was not provided by this high school was ________."47

Approximately 25 per cent of the students in each class indicated that guidance and counseling was the most important unfilled need. This was by far the most frequent response.

At a later date, Flanagan and Cooley reported on a one-year follow-up study of Project Talent and concluded that some of the basis for dissatisfaction for those who had the benefit of guidance and counseling during their high school career was connected with the fact that they had to make early decisions and were not prepared to do so; therefore, counselors, parents and teachers made the decisions for them. 48

In a study of college students conducted by Cramer and Herr, it was found that the relationships of frequency of contact and size of the graduating class to satisfaction with the high school guidance program was significant. 49


Grande sought to explore the attitudes of disadvantaged students toward the school guidance program. It was felt that an understanding of the attitudes toward guidance would be of crucial importance to school guidance personnel as well as providing implications for counselor educators directing counselor education programs. This study of attitudes toward guidance indicated that a differential pattern of endorsement of attitude items exists between experienced counselors and Upward Bound participants. A statistically significant difference was discovered between counselors and Upward Bound participants in terms of median attitude endorsement. While this difference did not appear to be discrepant in a qualitative sense, at least one-third of the Upward Bound participants held somewhat negative attitudes.

Teachers attitudes toward high school guidance programs was found to be generally favorable by Gibson. In general, the 208 secondary school teachers who were selected to represent 18 secondary schools in a four-state

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area were overwhelmingly of the opinion that the school guidance program makes a positive contribution to the instructional program of the school.

In surveying the attitudes of college students toward the college counseling program, Carlin found that the majority of the students were satisfied with the program. With the understanding that student reactions rapidly translate themselves into a campus reputation, Carlin pursued this study because he believed that it is of prime importance to carefully analyze the responses of students and to proceed with all diligence to improve the effectiveness of the counseling services. For this same reason, it is important to sample the attitudes of high school students toward the guidance program.

Surveying attitudes is becoming an important phenomenon in our society because it is recognized as an effective method of identifying areas which can be modified in order to be more responsive to the needs of the population. We can expect to see this method of evaluation expand in the future.

**Computer Research**

During the past fifteen years, there has been a great deal of research in the development and application

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of computer technology to diverse problems and situations. Guidance and counseling is one area which will be modified as a result of such research. With the doubling of knowledge every ten years, it is not feasible for the counselor to be aware of the thousands of bits of information which are pertinent to wise decision making. Goldman envisions that revolutionary changes in data processing and the resultant increases in the quantity and quality of information about clients and their prospective environments will make the work of the counselor even more difficult in the future.  

The following research is significant in illustrating the importance of technological innovations which affect guidance and counseling and the feasibility of computer-assisted counseling.

Vocational counseling


Impelliteri,\textsuperscript{56} and Minor\textsuperscript{57} have concerned themselves with the application of computer technology to the improvement of career decision making and vocational development. One of the major objectives of Cogswell's study is to explore computer methods of assisting the counselor by relieving him of routine information-processing technology and providing him with additional information while at the same time providing each and every student the opportunity to learn decision-making skills. Tiedeman's ISVD project has as its overall goal the development of a prototype of an information system which with repeated application could ultimately improve the career decision-making of all persons. A computer-assisted vocational guidance program has been developed by Impelliteri which presents occupational information to ninth-grade boys in order to allow them to explore occupational opportunities. Minor of the IBM Corporation and Super and Myers of Columbia University collaborated in the development of the Vocational Orientation System (VOS) which was designed to provide more effective utilization of occupational information by high school students during their education-vocational planning process.


\textsuperscript{57}Perrone and Thrush, \textit{op. cit.}, 260.
There are many additional investigators interested in the application of computer technology to the area of vocational decision-making such as Flanagan, Tondow, Campbell and Hilton, and the reader is referred to these authors for additional information concerning the application of computer technology to vocational counseling.

Clinical Setting

In working with computers in various tasks in clinical settings, psychologists are employing the computer for assistance in various spheres of counseling. Irwin has attempted to have the computer provide the counselor with a descriptive item interpretation of the Edwards Personal Preference Schedule. The mechanics of scoring the test and the evaluation of the results is completed by computer. The computer evaluation is used as the basis for the counseling interview.

A system which permits the MMPI's of college students to be scored and interpreted by computer, making use of existing research and actuarial data on that population, has been devised by Fowler. The computer program scores

58 Thomas J. Irwin, "The Use in Counseling and Research of a Computer Program which Gives an Item Analysis of the Edwards Personal Preference Schedule," (Speech presented at APGA Convention, Detroit, Michigan, April 7-8, 1968).

the MMPI, relates the scores to previously prepared interpretive rules, and selects the appropriate statements. The computer output includes the profile, the scores on clinical and various special scales and indices and a narrative clinical report in language and style appropriate to the setting.

Kleinmuntz and McLean have proposed a computer system for conducting large-scale psychodiagnostic interviews which approximate the ideal interview.60

A sample of 12 students filled out sentence completion forms and were then "interviewed" by a computer program developed by Veldman.61 The investigator states that the results of the study confirmed the feasibility of the technique and illustrated the value of tailored inquiry when it is conducted by a computer.

Coleman has developed a number of related computer programs for analyzing sociometric data for a number of different purposes.62 One program employs a scheme for


reducing the complex net of sociometric data into easily understandable terms.

At the present time, almost every area of the counseling process is being subjected to investigation in order to determine the most feasible tasks which can be assigned to a computer. We can expect such research to continue and multiply.

Comparison of student and college profile

The role of the school counselor in assisting students with college admissions has been to assist in the process of matching oneself and a college. However, until recently, counselors relied heavily on their own personal unscientific observations. The first systematic attempts made in this area over ten years ago were by Pace and Stern who attempted to characterize college climates.\(^6^3\)

In 1963, Super, Starishevsky, Matlin and Jordaan, recognized the importance of satisfaction in college choice.\(^6^4\) The investigators believed the best method of


resolving this issue was getting the subject to describe himself, getting him to describe the college with which he is to be compared, and then match the two descriptions. A variety of methods and instruments are suggested for this process such as analysis of interviews or essays or use of instruments such as Kelly's Role Construct Repertory Test.

In a recent study conducted by Ford and Urban, the authors suggest the mounting problem of college dropouts might be alleviated by a closer matching of student and school. 65

In 1968, Rand conducted a study to test the theory of homogeneous computerized matching of a student to a college and its effect on college choice satisfaction. Measures of scholastic potential, personality, interest, and subcultural orientation on 7,257 freshmen enrolled in 28 colleges were related to their expression of satisfaction with their choice of college. The contention that students most similar or dissimilar to students at their chosen school would be most satisfied or dissatisfied was not supported. The author concluded that the relationship between satisfaction and matching is minimal and quite

complex and casts serious doubt on this form of placing student in college. 66

Industry has recognized the importance of matching the student-college profile and many commercial enterprises are providing students with assistance through computerized college selection by means of such instruments as Select which is being employed in this study. Harcourt, Brace and World State:

Our basic philosophy is that there is a college for everyone. We assume that many students drop out of college because the college is not giving them what they expected. The problem is one of matching the student with the appropriate college. 67

Comparison of student and college profile is a new area of investigation and one that lends itself to the utilization of computer technology. As new colleges open, and as the number of students who wish to attend college increases, the computer will become one of the counselor's most important tools. We can expect to see great advancements in this area in the very near future.

Summary

A review of the literature points out several significant considerations for this study. The investigation


of attitudes is a relatively new area of exploration in the field of guidance and counseling. It was not until 1953 that an attitude scale was developed in order to measure student attitudes toward the counseling department. However, the literature indicates that since this time, despite the refinement of attitude measurement, counselors have not felt the need to any appreciable extent to explore the attitudes of high school students toward the guidance department or the amenability of these attitudes, whatever they may be, to change.

The attitudes of college-bound seniors toward the college-counseling process would at first appear to be a more recent area of concern due to the fact that it has only been in the past decade that a large majority of high school graduates continue on to higher education. However, as early as 1962, Wrenn reported that the counseling duty which ranked highest in frequency in a survey of counselors was college counseling.\(^6\) In spite of the frequency and importance of this task, there appears to be few studies which are concerned with the college-bound student and his views toward the college counseling process. The college-bound segment of any senior class is a very astute and verbal populus and one day, in the not too distant future,

they will take their positions as astute and verbal citizens of the community. Thus, as various authors have stated, a counseling department is effective only to the extent that it is valued by the student body and the community. Some educators predict that it will not be surprising to witness 100 per cent of future graduates continuing on to some form of higher education. It would appear, therefore, that the evaluation of this process is very important to the continued improvement of guidance and counseling.

Computer technology and its application to the guidance area has been devoted mainly to the vocational aspects of counseling. It is only within the past five years that researchers have concerned themselves with the components of the college-counseling process. It is interesting to note that psychologists have concerned themselves with the application of computer technology to a much wider range of counseling tasks. While the majority of research in this area is still in the experimental stage, there has been significant progress which indicates that we can expect the intermingling of guidance and computer technology to continue.

Therefore, while the tools of research are available and the amount of investigation in this area sketchy, the need for the specific results of this study appear to more than justify the present inquiry.
CHAPTER III
PROCEDURES

The major purpose of this chapter is to review the pertinent material and procedures which are fundamental to the development of this study. First, the setting in which this study was conducted is reviewed. It is important to note that the nature of this investigation may be more pertinent to geographical areas such as the Middle Atlantic States or the far West where a large portion of the high school population attempts further education and vies for a place in a freshman class. Second, the sample population which participated in this investigation is described and its method of selection is discussed. Third, the scale, Perceptions of College Counseling, which was developed in order to investigate Hypothesis Three will be reviewed in detail as well as the additional instruments which attempt to measure attitude change. Fourth, the history, development and philosophical undergirding of the computer treatment "Select" will be presented. Fifth, the collection of the data will be discussed. Sixth, analysis of the data is reviewed. A brief summary will conclude the chapter.
The Setting

This study was conducted in a suburban New York high school located in western Nassau County, Long Island. The community is comprised of middle-income residents and is located twenty-five miles south-east of New York City. The town population with which this study is concerned is 40,000.

The school participating in this study is identified as a comprehensive junior-senior high school enrolling 2,750 students. Of this total amount, 1,990 are enrolled in grades 9 through 12.

This particular school in which this study was conducted is one of six secondary schools of a Central High School District which enrolls 12,000 students in grades 7 through 12. Actually, about sixty per cent of the graduates of these six schools continue education beyond high school; forty per cent enter the job market. This district's drop-out rate based upon the number of tenth-year students who do not remain in school to graduate with their class, averages 6 per cent. Recently, the drop-out rate has been reduced to approximately 4.6 per cent.

Each of the schools in the Central High School District can be described as comprehensive high schools. Two of the schools offer specialized educational programs and a complete course in vocational and technical education.
is offered at one of the schools. Approximately 2,100 students, drawn from all of the schools in the district are enrolled in these special classes. In one school, classes for the mentally retarded at both the junior and senior high school level are offered.

In reality, each of the six schools in the district is conducted as an almost separate entity with substantially different goals and methods of meeting such goals in accord with the needs of the community. However, the six schools share a common board of education and central administrative staff. The central administrative staff includes a director of pupil personnel services and, in addition, each school building has a department chairman responsible for pupil personnel services. The six chairmen report directly to the central administrative director but have a great deal of autonomy.

As indicated previously, this study was conducted in only one of the schools in this system. In this one particular school, the class of 1970 had 454 graduates. This is approximately the same size of the senior class each year. For the class of 1970, the mean percentile I. Q. as measured by the Lorge Thorndike was 112. Of the 454 graduates, approximately 44 per cent continued on to four-year colleges and 24 per cent enter two-year junior colleges or other educational institutions; in total, 68 per cent of
the graduating senior class continued on to some form of higher education.

With regard to scholarships, sixty-one students received or were alternate candidates for the New York State Regents Scholarship, thirty-six students received various scholarships to colleges and universities, eight students received community scholarships, six students received appointments to service academies, thirteen students received commendations on the National Merit Scholarship Qualifying Examination and one student was a finalist on this same examination.

In 1969, 252 members of the senior class participated in the Scholastic Aptitude Test. The distribution of scores is as follows:

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Verbal</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>560</td>
<td>620</td>
</tr>
<tr>
<td>Lower</td>
<td>410</td>
<td>455</td>
</tr>
<tr>
<td>Median</td>
<td>485</td>
<td>530</td>
</tr>
</tbody>
</table>

The guidance department of this school system employs eight full-time counselors, one full-time vocational counselor, one full-time department chairman. As a rule two teachers are also part of the guidance staff working on the internship program; however, these teachers work on a part-time basis. The counselor-student ratio is 1:330. The department chairman, the vocational counselor, and the teacher-interns usually carry reduced case-loads.
The vocational counselor is responsible for all ninth grade students who want to explore the possibility of transferring to the vocational-technical high school in their tenth year and for all students who indicate that they do not plan to continue on to higher education; he is also responsible for all job placement.

Basically, a large percentage of students in this high school continue on to higher education and, therefore, college counseling is deemed an important function of the guidance department by both the guidance staff and the majority of the student population.

The Sample

The students who served in this study were members of the group which participated in the Scholastic Aptitude Test in May and July, 1969. This is an appropriate way to select members to participate in this study as the majority of colleges and universities in the New York area require that a student present Scholastic Aptitude Test scores in order to be considered for admission. Nevertheless, even if a student is planning on attending a school out of state, the results of this test are usually acceptable.

At the time this study began, September, 1969, these students were members of the senior class and at a point in time where they were ready to begin intensive investigation regarding college selection. In general, the majority
of colleges prefer filing of admission applications before the third month of the senior year.

**Instruments**

There were three instruments employed in this investigation: The Barker scale, *Attitudes Toward A School Guidance Program*; the Remmers' *High School Attitude Scale*; and the scale, *Perceptions of the College Counseling Process*, constructed by this investigator. All three instruments will be discussed in detail. In addition, the treatment to which the experimental group was exposed, the college questionnaire, *Select*, will be outlined.

*Attitudes Toward A School Guidance Program.* — One of the major instruments employed in this study was the Barker scale, *Attitudes Toward A School Guidance Program* (Form A & B), developed in 1966. The purpose of this scale is to measure attitude change on the part of high school students toward the guidance program.

In summarizing the author's description of how this scale was developed, we find that the scale is basically of the Thurstone equal-appearing interval type but the Likert method of summated ratings at one stage of construction is used in order to improve item selection.  

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Scaling by this method of equal-appearing intervals is laborious and time consuming but the resulting instrument has the advantage of simple administration, scoring and interpretation.

The first step in the development of this scale was to collect approximately 1000 expressions of opinions obtained by personally interviewing individuals in their home communities. These statements were edited and 190 of them were selected according to criteria suggested by Edwards and Kilpatrick. These 190 edited questions were presented to 220 college students who were used as judges for determining the scale value of each question. For each of the 190 statements presented, a frequency distribution was formed to summarize the ratings assigned by the 220 judges. From the frequency distribution of the ratings assigned by the two-hundred and twenty judges the median ratings assigned to each statement were computed as an index of the degree of favorability of attitude toward a guidance program which was implied by the statement. The scale value of each statement, then, was considered to be the median of the ratings assigned to the statement by the judges. From the distribution of ratings assigned to each attitude statement, the quartile deviation or "Q" was computed as a measure of the variability of the ratings and, therefore, as an index to the ambi-
quity of the statement. A statement having an excessively high quartile deviation was considered to be too ambiguous to use in the scale since it had been understood quite differently by different judges; therefore, 67 items were removed from further consideration. A scale discrimination item analysis was used to select the most discriminative of the 123 statements of opinion that survived the ambiguity screening.

The final selection of items for the two matched forms of the scale was by the combined criteria of scale value, clarity of meaning and cross-validation discriminative power. A bivariate distribution of scale values and item validity was helpful in the selection of items with maximum discriminative power at each level of scale value.

The reliability of the scale was computed by the Pearson product-moment coefficient of correlation of the scores on Form A and Form B and was reported at .70. This reliability figure may be considered a preliminary estimate of the alternate form reliability of the scale.  

In summary, the Barker scale, Attitude Toward A School Guidance Program was employed for the following reasons:

\[70\]

\[\text{Ibid., p. 1083.}\]
1. While several instruments have been developed to measure attitudes toward counseling, they are not pertinent to this particular study in that they pertain to a different level of counseling; for example, Form's Counseling Attitude Scale which is concerned with college students attitudes toward their counseling center.

2. This instrument has been subjected to a sufficient amount of examination and there is a substantial amount of information which supports its reliability. At present, it is the most valued test for the particular group which was the subject of this investigation.

High School Attitude Scale.--It is noteworthy that there are very few scales to measure attitudes toward specific educational institutions, despite the importance of these institutions in a complex, highly organized society such as ours.

The Remmers' High School Attitude Scale will be employed in this investigation to measure attitude change toward high school and its relationship, if any, to the guidance department and college counseling process.

This scale is one of the many Thurstone equal-appearing interval types of scales prepared by Remmers and it was first reported by Gillespie in 1936. In addition to the usual seventeen items on a Remmers generalized

71 A. L. Form, op. cit., pp. 96-102.
scale, this scale possesses one validating item on which the subject reports his attitude toward school on an eleven-point continuum.

The sample used to develop this scale is unknown, but samples used to develop Remmers' scales have included a wide range of subjects from sixth grade pupils to graduate students.

Response mode requires that subjects check those items with which they most agree by marking them with a plus.

The score is the median of the scale values of all items endorsed by the subject. High scores reflect favorable attitudes.

Although no specific information is available for this scale regarding reliability, the equivalent-form reliability for Remmers' scales is reported to range from .71 to .92 for a variety of samples ranging from sixth grade pupils to advanced graduate students.72 Cronbach, reporting in Buros' Third Mental Measurement Yearbook reports that parallel-form correlations are .753 and .727.73


Specific information regarding validity is missing. However, the method of construction should provide content validity.

Shaw and Wright report that more than any other Remmers scale, this scale is an unknown quantity. However, these authors state that the method of construction should ensure to some extent the adequacy of the scale for the purpose of group comparison.\footnote{Shaw and Wright, op. cit., p. 556.}

Perceptions of the College Counseling Process.—One of the major purposes of this study was to investigate attitudes toward the college counseling process as they existed in a senior high school class. To discover these perceptions, a questionnaire which could be answered by "yes" "no" was developed. This step was necessary since no instrument was available which was concerned with this one particular aspect of counseling, the college-counseling process. The development of this instrument and the procedures followed will be presented in the following paragraphs.

The area of student perception toward the college counseling process with which this study was concerned was viewed as three dimensional in nature:

1. **Content**
   a. College information
   b. Self-knowledge
2. Process
   a. College information
   b. College entrance activities
   c. Self-exploration

3. Counselor-Student Interaction

In order to obtain the most pertinent aspects of the college-counseling process, an investigation was made of the current literature which is published for the high school student and guidance counselor, i.e., Lovejoy's College Guide, Sulkin's Complete Planning for Colleges and the college-selection materials which are used by Interactive Learning Systems.

From these sources, a total of 54 questions were formulated which were concerned with the three dimensions of the college-counseling process (content, process, counselor-student interaction). These 54 questions were subjected to content validation.

As a first step, 5 judges from various spheres of counseling were requested to judge the significance of each area and each question by indicating on a three-point scale the degree to which they felt the question was important to the college-counseling process. Included in this group of judges were three counselor educators, one former counselor now engaged in a commercial enterprise concerned with computer-assisted college selection and a Ph.D. candidate in guidance and counseling who is director of the testing
bureau for an urban school system. As a result of this judgmental process, additions and deletions were made in the instrument.

A second group of five judges, high school guidance counselors, were requested to review the questionnaire and indicate the degree to which they felt each area and question was important to the college counseling process. Again, as a result of their suggestions, modification was made in the instrument.

Perceptions of the College Counseling Process was submitted to a group of randomly selected high school seniors to determine effective understanding. Subsequently, an open discussion was held with the group to determine whether this purpose had been achieved. Administration of the instrument took from eight to ten minutes.

In responding to the instruments, students answered "yes" or "no." The sum of the reaction to each item yields a single general favorableness-unfavorableness score.

The validity of attitudes scales has been a much discussed subject. Strang states, "There are no satisfactory criteria for the validation of opinions and attitudes." Remmers adds to this by noting, "The basic criterion for validating opinion must be corresponding

behavior." On this subject Freeman writes:

Validity of tests of attitudes and values is extremely difficult to determine in a statistical manner, since the only behavioral criterion is people's actions. Obviously, it is practically impossible to obtain objective behavioral data on a population sampling with regard to...education and the like. Furthermore, overt behavior need not always be correlated with attitude scores.... This makes validation, in the visual terms, a near impossibility. It is reasonable to conclude, however that if individuals make a genuine effort to respond according to their own attitudes, these scales are useful in evaluating the beliefs of the respondents, as of the time the responses are given. Whether retest scores will show significant changes will depend upon each respondent's experiences, including educational, in the interim.77

While there is a great deal of difficulty in establishing validity for attitude scales, this instrument does demonstrate several types of validity:

The contents of the inventory correspond with theoretical conceptions of the counseling process, illustrating face validity.

Content validity rests on evidence that the items constitute a satisfactory sample of some universe of content that is generally agreed upon by a committee of judges. If a test includes a representative sample of


the more important usages, it would have high content validity.

Perceptions of the College-Counseling Process was developed in the manner described above. Experts' opinions of what constitutes the essence of the college-counseling process were translated into inventory items. This process included the judgment of a representative group of individuals in or related to the field. Therefore, content validity has been demonstrated.

Treatment "Select":—In this study, the computer-assisted questionnaire to be employed by students as an aid in college selection is named "Select." The idea for this questionnaire was conceived of over four years ago by two college freshmen when they met and mutually agreed that the college counseling process should be improved. During the next several years in college, the authors of this questionnaire worked on their idea to improve the college selection process and tested it on 3500 students in the eastern United States in order to determine the most important questions to be answered by the average student in order to wisely select a college. This questionnaire is not intended to replace the college counselor in the high school. It is to be used in conjunction with the college counseling process in order to assist the student in selecting the school that best fits his individual needs.
and academic ability. As previously stated, the questions are of such a nature that they present the student with the types of decisions which must be resolved in order to make a sound judgment in college selection. The student fills out the questionnaire with the assistance of his counselor and his family and returns it to the offices of Harcourt, Brace and World Publishing Company where the information is keypunched and placed in the computer. As a result, the student's decisions are matched against 2 million factual items in the computer's memory bank concerning 3000 schools in the United States. Not all schools in the country are included in the memory bank and, interestingly, Ohio State University is one of the schools not included. The cost of the questionnaire computer service is $15.

The "Select" questionnaire was only used by those students in the experimental group of this study. No other students in the senior class were permitted to use this questionnaire while this study was being conducted. The counselors did not discuss computer-assisted counseling with students who did not participate in the study.

As a general rule, the computer types a letter to a student who has filled out a "Select" questionnaire listing the names of ten to fifteen schools which would be appropriate choices for that particular student with
regard to college selection. However, during this study, in order to insure that students not participating in the study would not become aware of this questionnaire, it was returned directly to the student's guidance counselor. The student and the parents were then invited to discuss the names of the schools submitted by the computer, but the letter was not given to the student or parent until the study was completed.

Collection of the Data

From the list of students who participated in the May and June, 1969, Scholastic Aptitude Test which is provided by the College Entrance Examination Board, 90 college-bound students were randomly selected. A table of random numbers was employed to select these students. From these 90 randomly selected students, 44 students were randomly assigned to the experimental group and the remaining students comprised the control group.

During the first week in October, Form A of the Barker scale, Attitudes Toward a School Guidance Program, was administered to all 90 members of the experimental and control groups. At the same time, Form A of the Remmers' High School Attitude Scale was also administered. The students were told that their answers to these two questionnaires were anonymous but the forms were coded in such a way that a comparison was able to be made between their
pre-test and post-test scores.

The post-test, Form B of the Barker scale, and the post-test, Form B of the Remmers' scale, was administered after all the members of the experimental and control groups received their college acceptance letters.

Any members who were absent when the pre-test and post-test were given were contacted by the investigator and the test was given to the absent members in a group session at a later date. No student participating in this study was given the attitude scale individually because it was important that the student feel free to answer the questions truthfully.

Perceptions of the College-Counseling Process was administered at the end of the experimental period after the students had experienced the college-counseling process and after they had received their college acceptance letters. In reality, Form B of the Barker scale, Form B of the Remmers scale and the scale developed by this investigator was administered at the same time.

Two counselors were assigned from among those who are normally assigned major responsibility for college counseling to work with both the experimental and control groups. The assumption was made that all students would utilize the guidance department in the normal way.
Analysis of the Data

In essence, the pre-test and post-test control group design was utilized in this investigation and can be demonstrated in the following manner:

\[
\begin{align*}
R & \ 0_1 \ X \ 0_2 \\
R & \ 0_3 \ 0_4
\end{align*}
\]

In this design, \( R \) represents the random assignment of students to the experimental and control groups. The \( 0_1 \) refers to the pre-test, or Form A, of the Barker scale Attitudes Toward A School Guidance Program. The \( X \) represents the use of the computer-assisted college selection questionnaire, "Select." The \( 0_2 \) refers to the post-test, or Form B, of the Barker attitude scale. The second line of the design refers to the control group where there was a pre-test and post-test but no variable was introduced into the counseling process.

This same design, pre-test and post-test, was utilized for the Remmers High School Attitude Scale.

The scale Perceptions of the College-Counseling Process is a post-test only design and was administered at the conclusion of the experimental period after the groups had experienced the college counseling process and had received their college acceptance notices.

The pre-test and post-test scores derived from the instruments Attitude Toward A School Guidance Program and
High School Attitude Scale were punched into IBM cards. An Omnitab Computer Program was utilized to analyze the data and t-ratios were found for hypothesis #1 and #4. The t-ratio was employed to determine at what level of confidence one may conclude that the difference between the means of two distributions is due to factors other than chance. The Omnitab formula employed to test the significance of difference between the means of unmatched groups is as follows:

$$t_{(m+n-2)} = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{\sigma^2}{x} + \frac{\sigma^2}{y}}}$$

The scale Perceptions of the College Counseling Process concerns itself with six distinct areas which were identified as encompassing the most important facets of the college-counseling process (refer to page 52). Five sections of this scale were analyzed separately (each question was arbitrarily assigned a value of 1) by the same Omnitab computer program used for hypothesis #1 and #4; the t-ratio was employed in order to determine the relationship between the treatment and each section of the college-counseling process. The previously-mentioned formula was utilized in this procedure.
One section of the scale, Perceptions of the College Counseling Process, was analyzed by employing Chi-Square with 1 degree of freedom (alpha level at the .05 level of significance). This separate analysis technique was necessary because additional information was sought in this section than in the other five components of the scale (refer to appendix). Chi-Square is represented by the following formula:

\[ \chi^2 = \frac{(0-E)^2}{E} \]

An analysis of variance technique was utilized for Hypothesis #2 also using the Omnitab Computer Program. This analysis was concerned with the interaction of the variables of I.Q., religion, sex of the student and sex of the counselor with the treatment and attitude change.

**Summary**

In this chapter it was shown that educators and psychologists are concerned with the problem of attitude and the methods of measuring attitudes. The instruments employed in the study were described and the method of developing the instrument Perceptions of the College Counseling Process was developed fully. The manner in which the data in the study were collected and the method employed in the treatment of the data was discussed. Where necessary, the rationale underlying the use of particular
statistics was expressed. In general, the chapter explained in considerable detail the research design of this study. In Chapter IV are presented the findings of the study.
CHAPTER IV
FINDINGS AND DISCUSSION

The purpose of this study was to investigate the attitude of college-bound students toward the guidance department, the college counseling process and high school and the influence of computer-assisted counseling in college selection on these attitudes. There was no instrument available to measure attitudes toward the college counseling process: therefore, the investigator developed a scale in order to explore this important aspect of counseling. A random sample of college-bound senior high school students were selected from a suburban high school located in the Middle Atlantic states.

The major purpose of this chapter is to describe the statistical techniques employed in this investigation and to analyze the data collected in this study.

Hypothesis I: There is no significant difference between pre-test and post-test mean attitude scores toward the guidance department between the experimental group which used computer-assisted counseling in college selection and the control group which did not use computer-assisted counseling in college selection.
In testing hypothesis I, the means and standard deviations were found for the experimental and control group as shown in Table 1.

### TABLE 1

COMPARISON BY MEANS, STANDARD DEVIATIONS AND t-RATIO OF ATTITUDE SCORES OF EXPERIMENTAL AND CONTROL GROUP TOWARD THE GUIDANCE DEPARTMENT

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>44</td>
<td>5.06</td>
<td>2.75</td>
<td>1.71*</td>
</tr>
<tr>
<td>Control</td>
<td>46</td>
<td>3.71</td>
<td>3.54</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>8.77</td>
<td>6.29</td>
<td></td>
</tr>
</tbody>
</table>

*Not significant at the .05 level

The t-ratio was 1.71, and this figure proved not to be significant at the .05 level. It was not possible, therefore, to reject the null hypothesis that there is no significant difference between the mean attitude scores toward the guidance department between the experimental and the control group. The t-ratio indicates that any difference in student attitudes toward the guidance department could be attributed to chance and not to the effect of the computer-assisted counseling in college selection. The inclusion, therefore, of computer-assisted college selection into the guidance program has no effect on student attitudes toward the guidance department.
While no attitude change was noted in a global sense, toward the guidance department, a change might be reflected in a more specific area such as the college counseling process. In addition, since it has been demonstrated that computer-assisted counseling in college selection has no effect on student attitudes toward the guidance department, it should be noted here that this method of college selection is totally concerned with factual data. A significant area for future research might be concerned with subjective data which might prove very important in choosing a college that is satisfying to a student.

Hypothesis II: There is no significant difference on pre-test and post-test mean attitude scores toward the guidance department between the experimental group which uses computer-assisted counseling in college selection and the control group which does not use computer-assisted counseling in college selection when I.Q., sex of the student, sex of the counselor, and religious affiliation are taken into consideration.

In Table 2 are listed the sum of squares, mean of squares, and the f-test which were found for the experimental and control group in a five-way analysis of variance. An Omnitab computer design was used in order to determine what effect these factors had on student atti-
tudes toward the guidance department.

**TABLE 2**

**OMNITAB FIVE-WAY ANALYSIS OF VARIANCE OF SELECTED VARIABLES ON ATTITUDE TOWARD THE GUIDANCE DEPARTMENT**

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>S.S.</th>
<th>M.S.</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>90</td>
<td>910.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Due to Mean</td>
<td>1</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Due to I.Q., Religion, sex of the student and sex of the counselor</td>
<td>4</td>
<td>75.53</td>
<td>15.10</td>
<td>.92*</td>
</tr>
<tr>
<td>Due to Treatment</td>
<td>1</td>
<td>8.35</td>
<td>8.35</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>83</td>
<td>826.30</td>
<td>9.95</td>
<td></td>
</tr>
</tbody>
</table>

*f-test of .92 not significant at the .05 level

Each factor was analyzed independently and its relationship to the treatment was noted; in addition, the four variables were analyzed in concert and an f-test was computed. The f-test was .92 and proved not to be significant at the .05 level. It was not possible to reject the null hypothesis that there is no significant difference between the experimental and control group when I.Q., sex of the student, sex of the counselor and religious affiliation are taken into consideration. The f-test indicates that any difference in student attitudes toward the guidance
department could be attributed to chance and not to the effect of the computer-assisted counseling in college selection.

It is surprising to discover that none of these factors alone or in diverse combinations reflects in student attitudes toward the guidance department. It would seem that college-bound students with high I.Q.'s who had performed well in high school would not view computer-assisted counseling in college selection in the same manner as the marginal student with a lower I.Q. who is also college bound. In a study conducted by Zeiders, it was found that there is a significant difference in attitudes toward the guidance department between academic students and those students enrolled in other curricular groups.\textsuperscript{78} It is possible that the students participating in this study had the I.Q. factor negated by a global attitude held by college-bound students that college selection is a difficult process and college entrance is never guaranteed regardless of how well a student has performed in school or how much intelligence he possesses.

Hypothesis III: There will be no significant difference in perceptions toward the college counseling process on the part of the experimental group which used

\textsuperscript{78}Zeiders, op. cit., p. 102-103.
computer-assisted counseling in college selection and on the part of the control group which did not use computer-assisted counseling in college selection after the treatment has been administered.

The scale Perceptions of the College Counseling Process was developed by the investigator in order to investigate one particular aspect of counseling, the college counseling process. The scale was divided into six parts; however, one section which pertained to the process of self-exploration was concerned with obtaining knowledge other than attitudinal and was analyzed by the Chi-Square method. The other five sections of the scale were analyzed by the t-ratio. Each question on the scale was answered by a "yes" or "no" and a value of 1 was arbitrarily assigned to each question. Each section of the scale was analyzed separately in relationship to the treatment and a discussion of each section of the scale will follow the outline presented on page 52.

In testing the first section of this scale, the means and standard deviations were found for the experimental and control group as shown in Table 3.
In testing this first section of the scale Perceptions of the College Counseling Process, the means and standard deviations were found for the experimental and control groups. The experimental group had a mean score of 5.75. The mean score of the control group was lower, 3.65. The t-ratio was 12.96 and this figure proved to be significant. It is thus possible to say that computer-assisted counseling in college selection has a significant relationship to attitudes toward the range of college information to which the experimental group was exposed.

The fact that the experimental group demonstrated a more favorable attitude toward college information may be attributed to the college selection form which concentrates on guiding a student's thinking through the
myriad questions that must be resolved in order to make a decision. One of the main goals of the guidance department is to assist students in making wise decisions. Wise decisions cannot be reached, however, unless the student has been exposed to, or explored, every facet which affects that particular decision. It is apparent that the experimental group which utilized computer-assisted counseling in college selection felt that they had been exposed to significantly more information than the control group.

Table 4 shows the means and standard deviations which were found for the experimental and control group in the second section of the scale which is called Self Knowledge.

**TABLE 4**

CONTENT SELF KNOWLEDGE
COMPARISON BY MEANS, STANDARD DEVIATIONS AND t-RATIO OF ATTITUDE SCORES OF EXPERIMENTAL AND CONTROL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>44</td>
<td>5.40</td>
<td>2.54</td>
<td>1.53*</td>
</tr>
<tr>
<td>Control</td>
<td>46</td>
<td>4.69</td>
<td>2.91</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>10.09</td>
<td>5.45</td>
<td></td>
</tr>
</tbody>
</table>

*Not significant at the .05 level
The t-ratio was 1.53 and this figure proved not to be significant at the .05 level. It was not possible to state that between the experimental group and the control group there were significant differences in perception toward the college counseling process as a result of employing computer-assisted counseling in college selection.

The finding that there is no difference between the experimental group and the control group in the area of self-knowledge disputes the claim by many that the inclusion of computer-assisted college selection will increase counselor effectiveness by eliminating a great deal of clerical work and thereby allowing more time for counseling of a more personal nature. For the counselor and the student to work together in completing the pen and pencil type of college selection form employed in this study might even be detrimental to the growth of self-knowledge as the completion of this computer form is a very time consuming process. Due to the heavy caseloads of the majority of counselors and the requirement by college admission offices that college applications be submitted by the third month of the senior year, little time would be left to devote to counseling of a personal nature.

The next section of the scale Perceptions of the College Counseling Process is devoted to the process by
which students learn about college information, college entrance activities and self exploration. Table 5 is concerned with the means and standard deviations which were found for the experimental and control groups for this particular area.

TABLE 5

PROCESS COLLEGE INFORMATION
COMPARISON BY MEANS, STANDARD DEVIATIONS AND t-RATIO
OF ATTITUDE SCORES OF EXPERIMENTAL AND CONTROL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>44</td>
<td>3.61</td>
<td>1.33</td>
<td>6.81*</td>
</tr>
<tr>
<td>Control</td>
<td>46</td>
<td>2.76</td>
<td>1.72</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>6.37</td>
<td>3.05</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level

In analyzing the third section of the scale Perceptions of the College Counseling Process, the means and standard deviations were found for the experimental and control groups. The experimental group had a mean score of 3.61 while the mean score of the control group was 2.76. The t-ratio was 6.81 and this figure is significant at the .05 level. It is possible, therefore, to say that computer-assisted counseling in college selection has a
significant relationship to the process by which students receive college information.

A reason for significance in the process by which students receive information may be attributed to the computer college selection form which assisted them in becoming more aware of the different questions that must be resolved and they, therefore, became more receptive to the numerous sources of information in their environment.

The means and standard deviations in Table 6 relate to the Process of College Entrance Activities for the experimental and control groups.

**TABLE 6**

PROCESS COLLEGE ENTRANCE ACTIVITIES
COMPARISON BY MEANS, STANDARD DEVIATIONS AND t-RATIO
OF ATTITUDE SCORES OF EXPERIMENTAL AND CONTROL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>44</td>
<td>2.43</td>
<td>1.61</td>
<td>3.03*</td>
</tr>
<tr>
<td>Control</td>
<td>46</td>
<td>1.86</td>
<td>1.43</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>90</td>
<td>4.29</td>
<td></td>
<td>3.04</td>
</tr>
</tbody>
</table>

*Not significant at the .05 level

While the t-ratio of 3.03 proved not to be significant at the .05 level there was a tendency toward it. It was not possible to state, however, that there were
significant differences in perceptions toward the college counseling process between the experimental and the control group in the area of college entrance activities.

Computer-assisted counseling in college selection is concerned with decision making based on factual data. The method or process of learning college entrance activities is also informational in nature, but it is possible that a degree of sophistication on the part of the students accounted for the fact that the process of college entrance activities did not reach the significance level. In a school atmosphere where 70 per cent of the student population continue on to some form of higher education, the methods of obtaining college admission are an integral part of daily student communications, and it is possible that a large portion of this particular type of information is obtained through an informational exchange with the peer group.

The next section of the scale Perceptions of the College Counseling Process which was devoted to Process Self Exploration was not developed in the "yes" and "no" form as the other sections (Refer to appendix). This section sought additional information that did not pertain to attitude. As stated in the previous chapter, this section on Process Self-Exploration was to be analyzed by the Chi-Square method. However, based on the two-way
contingency tables which were set up for each of the five questions in this section, it was determined immediately that the rows were independent of the columns and that the treatment had no effect on the scores and was not significant. As a result of this finding, it was determined that further analysis of this section would be fruitless.

The insignificance of this section was not unexpected in light of the finding that the Self-Knowledge portion was insignificant. It appears that self-exploration was not deemed an integral part of the college selection decision in the school in which this study was conducted.

The last section of Perceptions of the College Counseling Process was concerned with the Counselor-Student Dimension and Table 7 shows the means and standard deviations which were found for the experimental and control groups.
TABLE 7
COUNSELOR-STUDENT DIMENSION
COMPARISON BY MEANS, STANDARD DEVIATIONS AND t-RATIO
OF ATTITUDE SCORES OF EXPERIMENTAL AND CONTROL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>44</td>
<td>6.81</td>
<td>3.25</td>
<td>1.74*</td>
</tr>
<tr>
<td>Control</td>
<td>46</td>
<td>5.89</td>
<td>3.41</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>12.70</td>
<td>6.66</td>
<td></td>
</tr>
</tbody>
</table>

*Not significant at the .05 level

The t-ratio of 1.74 was not significant and, therefore, any difference in student attitudes toward the college counseling process between the experimental and control group could be attributed to chance and not to the effect of computer-assisted counseling in college selection.

Each counselor who participated in this study had counseled every student in both the experimental and the control group for a minimum of two years. The findings seem to indicate that student attitudes had formed prior to the senior year and computer-assisted counseling in college selection was not a significant factor in altering these attitudes.
TABLE 8
PERCEPTIONS OF THE COLLEGE COUNSELING PROCESS
COMPARISONS BY MEANS, STANDARD DEVIATIONS AND t-RATIO
OF ATTITUDE SCORES OF EXPERIMENTAL AND CONTROL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>44</td>
<td>2.40</td>
<td>8.01</td>
<td>8.90*</td>
</tr>
<tr>
<td>Control</td>
<td>46</td>
<td>1.88</td>
<td>8.38</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>4.28</td>
<td>16.39</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level

In analyzing the total scale, the means and standard deviations were found for the experimental and the control group. The experimental had a total mean score of 2.40 while the control group had a total mean score of 1.88. The t-ratio proved to be significant at the .05 level. It is possible to state that while only two sections of this scale were significant and one other section approached significance, as a total instrument the scale has a significant relationship to computer-assisted counseling in college selection.

Since each section of this scale has been discussed separately, no further discussion is deemed necessary.

Hypothesis IV: There will be no significant difference on pre-test and post-test mean attitude scores
toward high school between the experimental group which uses computer-assisted counseling in college selection and the control group which does not use computer-assisted counseling in college selection.

In testing hypothesis IV, the means and standard deviations were computed for the experimental and the control group as shown in Table 9.

TABLE 9
COMPARISON BY MEANS, STANDARD DEVIATIONS AND t-RATIO OF ATTITUDE SCORES OF EXPERIMENTAL AND CONTROL GROUPS TOWARD THE HIGH SCHOOL

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>44</td>
<td>5.84</td>
<td>1.41</td>
<td>.585</td>
</tr>
<tr>
<td>Control</td>
<td>46</td>
<td>3.04</td>
<td>1.99</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>8.88</td>
<td>3.40</td>
<td></td>
</tr>
</tbody>
</table>

*Not significant at the .05 level

The t-ratio was .585 and this figure proved not to be significant at the .05 level. It was not possible, therefore, to reject the null hypothesis that there is no significant difference between the mean attitude scores toward high school between the experimental group and the control group.
Unexpectedly, there is no difference in student attitudes toward the high school as shown in Hypothesis I and attitudes toward the guidance department as shown in Hypothesis IV. The purpose of the guidance department is to offer a unique service to the student population on a personal one-to-one basis while the other departments in the school concentrate on group learning and group goals. It is possible that the students view the guidance department in the same way as the other departments within the school due to the large case load every counselor is assigned. This idea is very pertinent to the setting in which this study was conducted because two counselors were responsible for processing the college applications of 300 senior students. As was stated previously, the majority of colleges request that seniors submit entrance applications before the third month of the senior year. It is obvious that these two counselors were pressed for time as they had a total case load of 320 students and, therefore, many additional duties to perform in addition to college counseling.

Summary

The findings of the research reported in this chapter were described. Analysis of the data provided the following findings:
Hypothesis I: There is no significant difference on pre-test and post-test mean attitude scores toward the guidance department between the experimental group which used computer-assisted counseling in college selection and the control group which did not use computer-assisted counseling in college selection. This null hypothesis could not be rejected at the .05 level of significance.

Hypothesis II: There is no significant difference on pre-test and post-test mean attitude scores toward the guidance department between the experimental group which used computer-assisted counseling in college selection and the control group which did not use computer-assisted counseling in college selection when I.Q., sex of the student, sex of the counselor and religious affiliation are taken into consideration. This null hypothesis could not be rejected at the .05 level of significance when the four variables were subjected to analysis of variance.

Hypothesis III: There will be no significant difference in perceptions toward the college counseling process on the part of the experimental group which used computer-assisted counseling in college selection and on the part of the control group which does not use computer-assisted counseling in college selection after the treatment has been administered.
The scale *Perceptions of the College Counseling Process* was analyzed in five parts according to the method by which it was developed (refer to page 52). The analysis provided the following information:

Part 1: Content College Information was rejected at the .05 level of significance.

Part 2: Content Self Knowledge could not be rejected at the .05 level of significance.

Part 3: Process College Information was rejected at the .05 level of significance.

Part 4: Process College Entrance Activities could not be rejected at the .05 level of significance but there was a definite tendency in this area toward significance.

Part 5: Process Self Knowledge could not be rejected at the .05 level of significance.

Part 6: Counselor-Student Dimension could not be rejected at the .05 level of significance.

As a total, this scale proved to be significant at the .05 level.

Hypothesis IV: There is no significant difference on pre-test and post-test mean attitude scores toward high school between the experimental group which uses computer-assisted counseling in college selection and the control group which does not use computer-assisted counseling in college selection. This hypothesis could not be rejected
at the .05 level of significance.

In the next chapter the conclusions of the study and the implications of these conclusions for future research are presented.
CHAPTER V
SUMMARY AND CONCLUSIONS

The final chapter of the study is treated in three parts. In the first part, the study is reviewed so that the reader may readily ascertain the basis for the conclusions that are drawn in the second part of this chapter. The chapter is concluded with recommendations for further research that are suggested by the results of this study.

Review of the Study

One of the major goals of the guidance department is to assist students in the selection of appropriate choices. One of the most important choices many students make during the senior year in high school is college selection. As a result of an increased number of students making the decision to pursue higher education every year, it is apparent that the smooth transition from high school senior to college freshman is quickly becoming an important function of the guidance counselor and a great deal of knowledge and expertise is needed in this area. Therefore, guidance departments must consistently evaluate new
methods of updating the services offered.

The main purpose of this investigation was to ascertain attitudes toward the high school guidance department, the college counseling process and the high school as a result of employing computer-assisted counseling in college selection. A further objective was to investigate the relationship between the religious affiliation, sex of the student, sex of the counselor, and I.Q. and college-bound seniors attitudes toward the guidance department as a result of employing computer-assisted counseling in college selection. Attitude toward the guidance department was inferred from the responses to the Barker scale Attitudes Toward A School Guidance Program and attitude toward high school was inferred from the responses to Remmers' High School Attitude Scale. No scale was available to measure student attitudes toward the college counseling process, therefore, a scale, Perceptions of the College Counseling Process was developed by the investigator. It was determined that there were six areas to be treated in the college counseling process and the scale was designed so that the student responded in a "yes" or "no" manner. The purpose of the scale was to determine the effect of computer-assisted college selection on the attitudes of college-bound seniors.
The study was conducted in the Middle Atlantic states area in a high school located in a suburban setting. The sample of 90 students was drawn from the total college-bound population of 275 students.

A review of the literature revealed that educators and psychologists were very much interested in the problem of attitudes and in the methods of measuring attitudes. The measuring of client reaction to the guidance program and college counseling has been an area of considerable interest to researchers for a long period of time. It has been recognized that counselee attitudes toward the counseling experience are most crucial since in the long run it is the counselee who must determine whether he has profited as a result of counseling. In addition, it is known that a student's reactions rapidly translate themselves into a reputation and, therefore, it is of prime importance to analyze the responses of students in order to improve the effectiveness of the counseling services.

In the clinical setting, psychologists have endeavored to apply computer techniques to most phases of counseling. However, the application of computers to the high school guidance program has been concentrated in the field of vocational decision making.

This latter finding may be due to the fact that computer technology is in the embryonic state. As little
as fifteen years ago fewer than 25 colleges had acquired electronic computers.

The interaction between computer technology and the college counseling process was found to be an unexplored area as was the interaction between computer technology and attitudes toward the high school guidance program. Several educators have recognized, however, the importance of matching student profile to college profile. Outside the school environment, many business firms are endeavoring to provide students with better methods of college selection through computer-assisted college selection.

The instruments employed in this study were described in Chapter III and the development of the scale *Perceptions of the College Counseling Process* was outlined in detail. In addition, a statement of the statistics employed to analyze the data yielded by these instruments was presented.

The main focus of the study was presented in Chapter IV. This chapter was concerned with describing the statistical techniques employed in this investigation and in analyzing and discussing the data. For each of the null hypotheses formulated in Chapter I, the following findings resulted:
1. There is no significant difference in mean attitude scores toward the guidance department between the experimental group which used computer-assisted counseling in college selection and the control group which did not use computer-assisted counseling in college selection.

2. There is no significant difference in mean attitude scores toward the guidance department between the experimental group which used computer-assisted counseling in college selection and the control group which did not use computer-assisted counseling in college selection when I.Q., sex of the student, sex of the counselor or religious affiliation is taken into consideration.

3. There is a significant difference in mean attitude scores toward the college counseling process between the experimental group which used computer-assisted counseling in college selection and the control group which did not use computer-assisted counseling in college selection. There were six sections to this scale and each scale revealed the following:

   a. There is a significant difference between Content College Information and computer-assisted counseling in college selection.
b. There is no significant difference between Content Self-Knowledge and computer-assisted counseling in college selection.

c. There is a significant difference between Process College Information and computer-assisted counseling in college selection.

d. There is no significant difference between Process College Entrance Activities and computer-assisted counseling in college selection. However, this section did approach significance.

e. There is no significant difference between Process Self-Exploration and computer-assisted counseling in college selection.

f. There is no significant difference between the attitudes toward counselor-student interaction and computer-assisted counseling in college selection.
4. There is no significant difference in mean attitude scores toward the high school between the experimental group which used computer-assisted counseling in college selection and the control group which did not use computer-assisted counseling in college selection.

Conclusions

The major purpose of this study was to investigate the attitudes of college-bound students toward the guidance department, the college counseling process and high school and to determine the effect of computer-assisted counseling in college selection on these attitudes. Within the limits of this study and on the basis of the findings, the following conclusions are presented.

The first conclusion is that attitudes toward the guidance department are not related to the inclusion of computer-assisted counseling in college selection. However, this study was concerned with the pen and pencil type of computer-assisted college selection and not the type by which the student interacts directly with a computer terminal and receives immediate feedback. In the type of computer-assisted college selection used in this study, there is a long delay between the time the student fills out the college selection form and the time he received the information back from the commercial enter-
prise that processes it. In this situation, the student is not fully aware of the use of the computer. The effect of direct interaction with a computer terminal and its relationship to attitudes toward the guidance department is an unexplored area.

A second conclusion is that I.Q., sex of the student, sex of the counselor, and religious affiliation have no effect on student attitudes toward the guidance department when considered individually or in concert. The conclusion that sex of the counselor and sex of the student have no effect on student attitudes is in agreement with Zeiders study which also explored the area of student attitudes toward guidance and counseling. 79 The I.Q.'s of the experimental and the control group ranged from 93 to 135 with an average of 118. Apparently the inclusion of computer-assisted counseling in college selection had no effect on this wide range of intellectual capacities. This finding is understandable, however, when one considers the difficulty students in the Middle Atlantic States have in obtaining college admission. High intelligence and good grades do not automatically guarantee admission to the college of the student's choice.

79 Zeiders, op. cit., pp. 102-104.
A third conclusion is that computer-assisted counseling has a favorable effect on student attitudes toward the college counseling process. However, this attitude is not generalized in such a way that it envelops the entire guidance department as was demonstrated by the results of Hypothesis 1. In addition, the only areas in the college counseling process scale in which attitudes were significantly changed were those which pertained to the transmission of factual information. The theory held by many authorities is that computer-assisted counseling for college selection will free the counselor from the routine work which is involved in assisting a student find an appropriate college and allow him time to counsel for personal adjustment has not been demonstrated. While the experimental group felt more favorably toward content college information and process college information than the control group, there was no difference between the two groups in the area of self-exploration or process self-knowledge. It is apparent that this area needs a great deal of additional attention as the emotional factors involved in making a wise college choice are as important as receiving adequate amounts of information.

We must constantly search for new methods of improving our services and it appears for this small segment of the total guidance picture, computer-assisted counseling in
college selection is valuable.

The last conclusion is that there is no significant difference in attitude toward high school between the experimental and the control group. In testing this hypothesis, it was also found that there was no change in attitudes toward the high school from the time the first attitude scale was administered to the second testing. This lapse covered a period of seven months. This finding does not agree with Flanders who found in two separate studies a significant loss in positive attitudes of students toward school during the year. This discrepancy indicates that a successful effort was being made to meet the needs of the students in the school in which this study was conducted.

The finding that there is no difference between the experimental and control group in their attitude toward the high school and the guidance department may be attributed to the heavy responsibilities of the guidance department. The students are not able to differentiate between the goal of mass education which is adhered to by the school and the goal of individual and personal service which is the goal of the guidance department because the counselor has too

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Flanders, Morrison and Brode, *op. cit.*, p. 334.
many counselees in order to fulfill this goal adequately. Therefore, the students are not given the opportunity to form a distinct attitude toward the guidance department. It is obvious that counselors who are responsible for three or four-hundred students are also devoted to assisting the masses and not the individual.

Recommendations for Further Research

The findings of this study give rise to a number of problems which further research can answer. The area of needed research are as follows:

1. It is thought that computer-assisted counseling will free the counselor from clerical tasks. It should be determined whether this theory is true or whether the computer creates more work for the counselor.

2. The introduction of computer-assisted counseling in college selection should be attempted at an earlier date in the student's high school career in order to determine what effect a longer period of time devoted to this type of counseling would have on a student's attitude or stability of decision making.

3. For the student who uses computer-assisted college selection, the exploration of college satisfaction one-year later is an important area of investigation.

4. It should be determined whether there is a difference in attitudes toward the college counseling
process between students who use pen and pencil type of college selection and students who interact directly with the computer and receive immediate feedback.

5. The effect of personality types on attitudes toward the use of computer-assisted college selection is a significant area for future research.

6. Subjective type information is not currently part of computer-assisted college selection programs. Methods must be devised in order to include the emotional area into the computer-counseling process.

7. Other categories than sex of the student, sex of the counselor, I.Q. and religious affiliation might be significant in the exploration of student attitudes; for example, what is the effect of geographical location on student attitudes toward guidance and computer-assisted counseling?

8. Units of study must be developed at the college level in order to prepare counselors to meet the demands of computer technology more effectively.

9. The attitude of counselors toward computer-assisted counseling is an area that should be researched. The effectiveness of this new technology will be determined by the willingness of counselors to work with it.

It is the desire of this investigator that the above and similar ideas be researched in order to evaluate
their effect on the guidance department. With this type of information, counselors can respond more effectively to student needs and can embark on programs which will be widely subscribed to by the student population.
APPENDIX

PERCEPTIONS OF THE COLLEGE COUNSELING PROCESS

PLEASE FOLLOW THE DIRECTIONS FOR STEP 1 AND STEP 2 CAREFULLY

STEP 1: INDICATE BY A CHECKMARK ( ) WHETHER THE UNDERLINED ACTIVITY "WAS AVAILABLE" IN OUR SCHOOL, "WAS NOT AVAILABLE" IN OUR SCHOOL, OR "DO NOT KNOW"

STEP 2: IF YOU MARK "WAS AVAILABLE" THEN INDICATE BY A CHECKMARK ( ) NEXT TO THE "YES" OR "NO" WHETHER YOU BELIEVE YOU RECEIVED ADEQUATE ASSISTANCE AS LISTED IN THE ITEM.

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WAS AVAILABLE        WAS NOT AVAILABLE        DON'T KNOW

Process Self-Knowledge

1. I received adequate assistance in understanding myself through individual counseling.
   Yes ___
   No ___

2. I received adequate assistance in understanding myself through large group guidance sessions such as classroom discussion.
   Yes ___
   No ___

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3. I received adequate assistance in understanding myself through small group guidance sessions.
   Yes ___
   No ___

4. I received adequate assistance in understanding myself through small group personal counseling.
   Yes ___
   No ___

5. I received adequate assistance in understanding myself through sessions with the counselor and my parents.
   Yes ___
   No ___

DIRECTIONS: Please answer every question on the following pages by placing a checkmark (√) next to the "Yes" or "No."

Content College Information

6. I was presented with a sufficient number of alternative schools to consider.
   Yes ___ No ___

7. I was presented with a sufficient number of types of schools to consider.
   Yes ___ No ___

8. I was presented with a sufficient number of locations of schools to consider.
   Yes ___ No ___

9. I was presented with sufficient opportunity to explore the financial requirements of schools in which I was interested.
   Yes ___ No ___

10. I was presented with sufficient opportunity to explore important facts about the types of students which attend the schools which I considered attending.
    Yes ___ No ___
Yes___No___ 11. I was presented with sufficient opportunity to explore the fact that many schools have particular strengths and weaknesses in their curricular offerings.

Yes___No___ 12. I was presented with sufficient opportunity to learn about the religious affiliation or religious activities of the schools in which I was interested.

Yes___No___ 13. I was presented with sufficient opportunity to explore the living conditions of the schools in which I was interested such as dormitory living, off-campus housing, living at home, or fraternity or sorority housing.

Yes___No___ 14. I was presented with sufficient opportunity to explore the admission requirements of various schools in which I was interested.

Yes___No___ 15. I was presented with sufficient information concerning special opportunities such as Honors Programs or Advanced Placement programs.

Yes___No___ 16. I was presented with sufficient opportunity to acquire miscellaneous information about the colleges in which I was interested such as setting, cultural opportunities, quality of faculty, accreditation and teacher-student ratio.

Self Knowledge

Yes___No___ 17. I had the opportunity to discuss my personal reasons for attending college.

Yes___No___ 18. I had the opportunity to discuss and gain insight into the outside pressures which affect my decision to attend college.

Yes___No___ 19. I had the opportunity to explore my parents motives or lack of motives for my future education.
Yes__No__ 20. I had the opportunity to examine the influence other important individuals in my life such as my parents and friends had on my decision to attend college.

Yes__No__ 21. I had the opportunity to examine my chances for success in college.

Yes__No__ 22. I had the opportunity to discuss my long-range career goals.

Yes__No__ 23. I had the opportunity to examine my own feelings about independence and freedom related to college life.

Yes__No__ 24. I had the opportunity to explore what I am able to afford financially for my college education.

Yes__No__ 25. I had the opportunity to discuss myself personally including my own value system, my strengths and weaknesses, and my personal and academic development.

Process College Information

Yes__No__ 26. College information was distributed through school bulletins or announcements by the guidance department.

Yes__No__ 27. College information was distributed through college bulletins provided by the counselor.

Yes__No__ 28. College information was distributed and interpreted through small group counseling sessions.

Yes__No__ 29. College information was distributed and interpreted through large group guidance sessions such as in the classroom.

Yes__No__ 30. College information was distributed and interpreted through individual contact with my counselor.
Yes__No__ 31. College information was obtained through fellow classmates and/or friends who had been assisted by a counselor.

Yes__No__ 32. College information was obtained through my parents or members of my family who had been assisted by the counselor.

Yes__No__ 33. College information was obtained through an out-of-school placement agency with the assistance of the counselor.

College Entrance Activities

Yes__No__ 34. I received assistance in filling out college admission forms.

Yes__No__ 35. I received assistance in contacting colleges.

Yes__No__ 36. I received assistance in identifying whom to contact concerning college admissions.

Yes__No__ 37. I received assistance in learning which colleges I had the best opportunity for admittance.

Yes__No__ 38. I received assistance in being successful in a personal interview.

Yes__No__ 39. I received assistance in contacting college representatives when they visited our school.

Yes__No__ 40. I received assistance in learning how to visit college campuses.

Counselor-Student Dimension

Yes__No__ 41. I feel my counselor is available whenever I need him.

Yes__No__ 42. I feel free to ask any questions when I want.
Yes__No__ 43. I feel my counselor is interested in and understands my problems.

Yes__No__ 44. I feel free to express my true feelings and opinions.

Yes__No__ 45. I feel that my counselor encourages my initiative and continuing on my own.

Yes__No__ 46. I feel my counselor protects confidences.

Yes__No__ 47. I feel my counselor knows more about college counseling than any other individual.

Yes__No__ 48. I feel my counselor has provided me with sufficient information concerning college so that I can make a choice.

Yes__No__ 49. I feel my counselor has assisted me in learning how to make my own decisions.

Yes__No__ 50. I feel my counselor respects me.

Yes__No__ 51. I feel my counselor prevents distractions when we are engaged in an individual interview.

Yes__No__ 52. I feel my counselor keeps appointments promptly.

Yes__No__ 53. I feel my counselor is very interested in my college choice.

Yes__No__ 54. I feel my counselor has helped me to understand and utilize all sources of assistance.
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